CMS NOTES de la SMC

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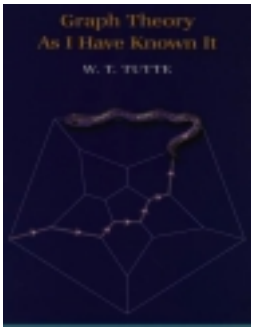
# Insights from the Father of Graph Theory

Book Review by Ralph Stanton, University of Manitoba

**Graph Theory As I Have Known It**
By W.T. Tutte
Clarendon Press, Oxford, 1998
156 pages.




For over sixty years, Bill Tutte has worked in Graph Theory and he can truly be called the father of the subject. His contributions have been many and varied, and have been of fundamental profundity and importance in the development of the subject. This fascinating book is an account of some parts of the theory in which he took special interest, and he reveals how he was led to many of the theorems and proofs for which he is famous.

The way in which the book came to be written is an interesting story in its own right. Professor Tutte gave a set of lectures at the University of Waterloo in 1984, just before his retirement, and these lectures had the same title as this book. U.S.R. Murty had the happy idea of seeing that these lectures appeared in print. Professor Tutte has updated his remarks from the 1984 version, and the book is now available to stimulate the interest of all graph theorists as well as those who have marginal interests in the subject.

I shall try to give the flavour of the book by giving a brief summary of each chapter and then ending up with an over-all view.

Chapter 1, on "Squaring the Square", tells how Bill Tutte, Leonard Brooks, Cedric Smith, and Arthur Stone, inspired by the mathematical recreational books of Rouse Ball and H.E. Dudeney, enthusiastically, in the 1930s, attacked the problem of dissecting a square into smaller but unequal squares. They discovered the connections of this problem with Kirchhoff's famous laws for electrical networks. It is now known that the smallest such square is unique and has order 21. To me, the most important result of this research is that Bill Tutte felt the fascinations of graph theory and left Chemistry, his undergraduate study, to pursue a career in Mathematics.

*(see GRAPH–page 9)*

*CMS NOTES*
*NOTES DE LA SMC*

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## EDITORIAL

*S. Swaminathan*

As this issue appears the transition to the third millenium would have taken place. For all of us in the mathematical world many problems get carried over. Decreasing enrollments, the perennial problem of the right method of teaching calculus, whether calculus is really necessary for the modern graduate, coping with budget cuts and increasing disfavour of basic research – these are some of the problems to which we have to find solutions.

While it is clear that there are no easy solutions, one should realize that what underlies these questions is the attitude towards mathematics and mathematicians not only by the public but also by non-mathematical academicians. I have commented earlier on the public perception of mathematics. It is generally true that a lay person views a mathematician with some awe. Whereas a scientist who does her research in a laboratory can be expected to be in her lab when she is not teaching a class, a mathematician need not always be at her desk writing equations on a pad of paper; she may be taking a walk in the woods and a quick judgement is made as to who is working hard. The nature of a mathematician's work and his modus operandi should be made clearer. And this can be done best only by the mathematicians themselves.

*****

Au moment où paraîtront ces lignes, le passage au troisième millénaire aura déjà eu lieu. Pour nous tous, de la communauté mathématique, les difficultés ne s'arrêtent pas là. Les inscriptions à la baisse, l'éternel questionnement sur la meilleure manière d'enseigner le calcul différentiel et intégral et sur la pertinence de cette manière pour les diplômés d'aujourd'hui, les compressions budgétaires, la popularité décroissante de la recherche fondamentale : voilà quelques-uns des problèmes que nous devrons résoudre.

De toute évidence, il n'existe pas de solution toute faite. Il faut cependant admettre que ces questions découlent de l'attitude envers les mathématiques et les mathématiciens non seulement du grand public, mais aussi des universitaires d'autres disciplines. J'ai formulé un peu plus tôt un commentaire sur la perception des mathématiques par le public. Les mathématiciens inspirent le plus souvent un respect mêlé de crainte aux non-initiés. Une scientifique qui fait des recherches en laboratoire sera généralement au labo quand elle n'enseignera pas, mais une mathématicienne n'a pas toujours besoin d'être à son bureau à griffonner des équations sur un bout de papier; elle peut très bien travailler tout en se promenant dans les bois. Les gens sont prompts à porter un jugement sur laquelle des deux travaille le plus fort... Il faudrait clarifier la nature du travail des mathématiciens et leur façon de travailler. Et qui de mieux pour ce faire que les mathématiciens eux-mêmes?

## LETTER TO THE EDITORS

In relation to the announcement which appeared on page 22 of the October 1999 issue of the CMS NOTES, on an International Symposium of Fields Medallists which contains the statement "This is the first time a Symposium of Fields Medallists has been attempted, anywhere", I would like to inform you that the Centre de Recerca Matemàtica (CRM), Barcelona, organized in June 1991 the "Symposium on the Current State and Prospects

of Mathematics", which included invited lectures by the Fields medallists A. Connes, G. Faltings, V. Jones, S. Novikov, S. Smale, R. Thom and S.-T. Yau. The lectures from this Symposium have been published by Springer-Verlag, Berlin, 1992, in Lecture Notes in Mathematics 1525, edited by Carles Casacuberta and Manuel Castellet, and entitled "Mathematical Research Today and Tomorrow: Viewpoints of Seven Fields Medallists."

*Manuel Castellet–Director CRM, Barcelona*

# FROM THE PRESIDENT'S DESK

*Richard Kane*

This article is focused on our Winter meeting held in December at Montréal. I am happy to repeat what has become a constant refrain in my comments on these events, namely the meeting was very successful. The meeting had 354 registrants, a number which comes close to matching the record number from last year's Kingston Winter meeting. Such numbers would have been unimaginable a few years ago and clearly confirm the effectiveness of the new format for CMS meetings. This format puts an emphasis on an expanded range of activities, notably the number of sessions, as well as on the involvement of the local community in organizing these activities. The Montréal meeting amply fulfilled these goals with eleven strong sessions involving 183 speakers. Many members of the Montréal mathematics community, particularly those from our host institution, Université de Montréal, helped in organizing the meeting. I thank all these organizers for their hard work, notably Michel Delfour, the Meeting Director, and Véronique Hussin, the Chair of the Local Arrangements Committee.

The meeting also had several satellite events. First of all, the one day symposium celebrating the 30th anniversary of the Centre de recherches mathématiques (CRM) took place on the day preceding our meeting. Over those 30 years, the CRM has played an increasingly major role in Canadian mathematics, achieving national and international recognition for its accomplishments in promoting research, graduate training and outreach.

The CRM has been joined in the past decade by two other Canadian mathematical institutes: the Fields Institute and the Pacific Institute (PIMS). These three institutes have provided Canadian mathematics with new and important infrastructure for research and graduate training. And they have demonstrated real leadership in the development of interactions between the mathematics community and other disciplines, as well as with business and industry. The CMS has been actively discussing with these institutes ways in which we might collaborate in the pursuit of common goals.

The first CMS Job Fair, which took place immediately following the Montréal meeting, is a prime example of such collaboration. It was organized by Christiane Rousseau with support from the CRM, the Institut des sciences mathématiques (ISM) and the two outreach networks NCM2 and MITACS. The CMS hopes to make such job fairs a recurring feature of CMS meetings, and to involve the mathematical institutes and MITACS as ongoing partners. In particular, a job fair in partnership with MITACS is planned in conjunction with "Math 2000", the large joint meeting to take place this June at McMaster. It is a shared perception among all of the above groups that there are a large number of employment and research opportunities for mathematicians in the private sector and that it is the responsibility of Canadian mathematicians to inform their students and help prepare them for such employment opportunities.

Let me now turn to the December Executive and Board meetings. As I have mentioned in previous articles, a major review of CMS activities is now underway. The aim is to "review all aspects of CMS operations and bring forward recommendations for their development and/or modification." This review and planning is taking place via a series of task forces. Further details on these task forces, including mandates and complete membership, can be obtained from the CMS web site (http://cms.math.ca/CMS/Projects/-1998/future.html). Two of these task forces (Finance and Fund Raising, Support of the Community) submitted their final reports to the Board in December. Both reports contain a large number of recommendations which will be carefully reviewed, by CMS standing committees and by others, over the next six months. Many of the recommendations have implications for the future development of the CMS and, hence, are of interest to all members. So you are urged to read the reports and to add your own comments to the discussion. If you have observations please send them by the beginning of April to *president@cms.math.ca*.

A third committee report was also submitted to the Board in December. It was a major recommendation of a former task force (Budget Policy) that a

review of Electronic Services and of Camel (the CMS web site) should be carried out. The ad-hoc review committee was formed one year ago and its report was also submitted to the Board in December. The report is available at the above Camel web site. The Executive/Board acted on the main recommendations of the report. The thrust of the report was to suggest a process for clarifying the responsibilities and functioning of Camel, and also for setting the financial operations of Camel on a sounder basis. The Executive/Board passed a motion restructuring the Electronic Services Committee, making it a more compact and more targeted group. And this downsized ESC has been assigned responsibility for preparing policy statements regarding the functions and priorities of Camel, the administrative structures of Camel, as well as developing job descriptions for the personnel associated with Camel.

I would like to thank Lynn Batten (Finance and Fund Raising), Ian Goulden (Electronic Services and Camel), and Kathyrn Hare (Support of the Community) for their very effective chairing of the above committees/task orces. I would also like to thank all their committee members for their hard work.

To look ahead, the final stage of planning will be centred in the Executive and will begin in the second half of this year. The Board has now received a total of six reports from task forces or associated committees. Two more task forces (Publications, Office Strategies) are scheduled to report at the Board meeting in June. The Executive will then consider all the reports of these various task forces and begin to develop an overall strategy for implementing recommendations. A final summary report on planning is due in the year 2001.

# EDUCATION NOTES

Ed Barbeau, University of Toronto

### Preparation of Teachers

As curricula are being revised across the country, it is becoming clearer how much their success is dependent on the quality of the teachers who have to present them to their classes. While this issue is important at the secondary level, it is overwhelming at the elementary level, where many teachers have no more than high school mathematics and many have an aversion to the subject. In the next few months in these pages, I would like to focus on how our colleagues are attempting to meet the need for better teacher preparation.

One of the earliest courses for prospective elementary teachers was given by Klaus Hoechsmann at the University of British Columbia; unfortunately, the course he gave has retired with him. He has described the course in his article *Higher Math for Elementary School Teachers* appearing in these *Notes* (28:5 (July-August, 1996) 14-16). There is also a description on the website

http://www.math.ubc.ca/ hoek/Teaching/Re335.pdf.

As he puts it, further adventures in advancing the cause of teacher preparation have left a trace in

http://www.math.ubc.ca/ hoek/Miscellany/Cert/certif.htm

and

http://www.math.ubc.ca/ hoek/Miscellany/Cert/certout1.pdf.

Swapna Mukhopadhyay and Virgina Warfield of the University of Washington in Seattle published an article *Mathematics in the Making: an Experience in Teaching without Telling* in these *Notes* (27:2 (March, 1995) 14-17), about their course to "help beginning teachers redefine their perspective of elementary school mathematics".

However, this month's column will present a description of two other courses. I am indebted to David Poole for a description of Trent University's course on mathematics for the contemporary classroom and to Mark Spivakovsky for an account of a problems course given in Erindale College at the University of Toronto. The first is directed to elementary preparation and the second to secondary preparation, although we shall see that it was conceived as being of value more generally.

### Trent University

At Trent, approximately 50% of all mathematics majors are education students intending to teach at the intermediate or secondary level. In addition to the usual courses that mathematics students take (calculus, linear algebra, analysis, etc.), we recommend that prospective teachers include among their elective courses the history of mathematics, number theory, geometry, discrete mathematics, and our problem-solving seminar.

However, there is another group of education students for whom these courses are inappropriate: prospective elementary teachers. Dubbed "the neglected constituency" by Tom Hungerford (*Amer. Math. Monthly* 101:1 (1994) 15-21), they typically are not mathematics majors – indeed most are humanities and social science majors – and often have a very weak mathematics background from high school. Many are quite "math phobic" and have little or no confidence in their ability to do (or even think about) mathematics.

For these students, [Trent offers] a course entitled *Mathematics for the Contemporary Classroom* that incorporates many topics from geometry, discrete math, number theory,

probability and statistics, but packages and presents the material in a way appropriate for this audience.

The course is restricted to an enrolment of 30 and is not available to anyone who has already taken a university-level mathematics course. It runs in a three-hour evening slot, once a week for 24 weeks. The course is "hands on" with most topics introduced by having the class work in small groups on an activity intended to draw out the mathematical theme for that particular class. This is usually followed by a short lecture summarising and further illustrating the main ideas. The students then have further opportunities to do examples, again working in groups, and the class sometimes concludes with a video. The teaching method used can best be described as a variant of the *ARTIE* method espoused by Bill Ralph (*CMS Notes* 27:4 (May-June, 1995) 16-20).

Evaluation in the course consists of four group assignments and two individual tests. Students also complete a project (in the form of a "science fair" type exhibit) and keep a weekly journal. The journal is intended to be a record of each student's reactions to the week's class. It also includes a "clippings file" in which they keep, on a weekly basis, articles from the media that contain uses or abuses of mathematics.

One or more upper-year mathematics majors (usually education students) serve as teaching assistants in this course. They assist with the activities in class and, outside class, are available for extra help as needed. One of the most valuable roles they serve is to make sure that the students in the class keep talking to one another about mathematics and not retreating into silence whenever an unfamiliar topic (or a difficulty) arises.

This course has been offered for five years and response has been very positive. Many students have commented that it has not only helped them overcome their fear of mathematics but has changed their view of what mathematics *is* and excited them about the possibilities for teaching mathematical topics "across the curriculum."

I would strongly encourage mathematics departments everywhere to offer courses such as this one. We all routinely offer mathematics courses for business, engineering, liberal arts, etc. Yet exciting elementary school teachers about mathematics is certainly as important. The impact they have on young children is enormous and if part of that effect is to instill in their students a love of and curiosity about mathematics, then our efforts will have been rewarded.

A course outline for *Mathematics for the Contemporary Classroom* may be found at:

http://www.trentu.ca/academic/math/dgp/MA280.html.

*David Poole*

**University of Toronto at Mississauga**

MAT 498 was initially conceived specifically with future secondary school teachers in mind, although I believe that all our students can benefit from it, regardless of their choice of career. Mathematics is nothing but common sense and logical reasoning. These skills are indispensable to people in all walks of life; teaching them is the main goal of mathematics education, both at university and in secondary school. The one thing I want students to learn during their university years is to think for themselves, logically and critically. This is more important than any particular mathematical theorem. However, we do cover through a collection of problems, a selection of topics chosen from number theory, combinatorics, group theory, probability theory and analysis, for example.

The pillars of my strategy for achieving this goal are independent work and free and open discussion. This is particularly important for future secondary teachers, since they will have to transmit these ideas and the "thinking" approach to mathematics to the younger generation. I want to demonstrate in action an alternative method of teaching, which they will use with their pupils, as well as provide samples of material that can be used in the classroom. Of course, there are other messages for future teachers, and through them, for the students: mathematics can be fun, problems can be approached creatively rather than by applying templates, some problems require time to solve and there is a great deal of satisfaction in finally "getting it". It makes me very happy to see students get caught up in the excitement and become obsessed with mathematical problems.

Usually, in class, I hand out a list of about ten problems once every week or two. Usually the students work in small groups or occasionally in the class as a whole, while I walk around and talk to students individually or in groups. When enough students have solved a particular problem, I have someone explain it at the blackboard. Often, even if the problem is not solved, we discuss ideas and possible approaches as a group.

Here is a sampler of problems:

- Which is greater: $99^{50} + 100^{50}$ or $101^{50}$?

- (a) In how many ways can 8 rooks be placed on an $8 \times 8$ chessboard in such a way that no rook can take another?
  (b) In how many ways can 4 rooks be placed on the chessboard so that no rook can take another?

- Find the area of the region of the plane, bounded on the right by the ellipse $x^2 + 3y^2 = 3$ and on the left by the straight line $2x = \sqrt{6}$. (This problem does not require integration.)

- Let $X$ be a figure in the plane. Assume that $X$ is moved to itself by a rotation about a point $O$ by $48°$. Does it necessarily follow that $X$ is moved to itself by a rotation about $O$ by $90°$? $72°$?

- Prove, for every integer $n$ exceeding 2, that
$$(1 \cdot 2 \cdot \cdots \cdot n)^2 > n^n.$$

- Into how many parts is a plane divided by $n$ straight lines, such that no two lines are parallel and no three lines pass through the same point?
- Find the last three digits of the sum
$1^{1999}+2^{1999}+3^{1999}+4^{1999}+\cdots+999998^{1999}+999999^{1999}$.
- The monetary unit in the Republic of Oz is called an *emerald*, and both 3-emerald and 5-emerald bills are in circulation. Prove that any sum greater than 7 emeralds can be paid by these notes.
- A plane is divided into parts by $n$ straight lines. Prove that these parts can be coloured with red and white paint, so that any two parts, having a common side, are coloured differently.
- For a positive integer $x$ with at least two digits, let $F(x)$ denote the integer obtained from $x$ by deleting the first digit. Does there exist $x$ such that (a) $x = 58 \cdot F(x)$? (b) $x = 57 \cdot F(x)$?

I hope that some of my students do eventually go into teaching and that some of the enthusiasm is passed on to their future students.

*Mark Spivakovsky*

# AWARDS / PRIX

## 1999 Adrien Pouliot Award

The fifth Adrien Pouliot Award was given to Eric Muller of Brock University at the meeting of the Candian Mathematical Society last December in Montreal. The Adrien Pouliot Award recognizes significant and sustained contributions to mathematics education in Canada.

*Adrien Pouliot, Jr. (left) presents award to Eric Muller*

Many members of the Canadian mathematical community are aware of Eric Muller's work to the extent that they could provide a list sufficient to justify his selection for the award. Yet they are likely to be aware of only some of things he has done to enrich the mathematics education environment in Canada and beyond. These include: development of numerous courses at Brock University, courses with a wide range of target students; creation and sustained support of Math Trails, and Math and Science Camps, and teacher workshops with regional and provincial scope; service in a variety of executive and planning roles on behalf of the Canadian Mathematics Education Study Group, of International Congresses on Mathematics Education, of the International Commission on Mathematics Instruction, of the Fields Institute, and of our own Society.

But a breathless list of some of Eric Muller's service and contributions does not do justice to the personal qualities that augment the impact of his work. People who have worked with him know of his passion for teaching and learning mathematics, of his vision, coupled with the energy to make that vision real, of his wonderful blend of imagination and practical acumen, his focus on the needs of the community he serves, and of his ability to bring people together on behalf of a stronger mathematics education community. In presenting to Eric Muller the 1999 Adrien Pouliot Award, the Canadian Mathematical Society speaks on behalf of an extended community that is grateful for all he has done on our behalf.

Nombreux sont les membres de la communauté mathématique canadienne qui connaissent le travail d'Eric Muller au point de pouvoir fournir une liste suffisamment longue pour justifier son choix comme lauréat. Mais ces personnes ne connaissent probablement qu'une partie de tout ce qu'il a fait pour l'enseignement des mathématiques au pays et à l'étranger. Il a notamment élaboré de nombreux cours à l'Université Brock à l'intention d'un vaste éventail d'étudiants; il a créé et appuyé de façon soutenue des Sentiers mathématiques, des camps mathématiques et scientifiques, de même que des ateliers pour enseignants à l'échelle régionale et provinciale; il a occupé divers postes de nature administrative et organisationnelle au sein du groupe de travail sur l'éducation mathématique au Canada, de congrès internationaux sur l'éducation mathématique, d'une commission internationale sur l'enseignement des mathématiques, de l'Institut Fields et de notre propre Société.

Mais une liste interminable, quoique partielle, des réalisations d'Eric Muller ne rendra pas pleinement hommage aux qualités personnelles qui accentuent le rayonnement de son oeuvre. Ceux et celles qui ont travaillé avec lui connaissent sa passion pour l'enseignement et l'apprentissage des mathématiques, sa façon de voir les choses et l'énergie qu'il déploie à les concrétiser; son merveilleux mélange d'imagination et de perspicacité; son attachement à répondre aux besoins de sa communauté, et sa capacité de rassembler les gens pour créer un milieu dynamique dans le domaine de l'éducation mathématique. Au nom de la communauté mathématique élargie et en remerciement de tout ce qu'il a fait pour elle, la Société mathématique du Canada est fière de remettre le prix Adrien-Pouliot 1999 à Eric Muller.

## 1999 Coxeter-James Lecturer

The 22nd Coxeter-James Lecture was presented in Montréal, Québec at the December Meeting of the Society by Maciej Zworski of University of California, Berkeley and the University of Toronto.

*left to right: Niky Kamran (CMS Research Committee Chair), Dr. Maciej Zworski, Richard Kane (CMS President)*

Maciej Zworski is one of the world's leading mathematicians working in the difficult and fundamental area connecting partial differential equations, mathematical physics and applied mathematics. His main interest lies in the theory of resonances and in the problem of diffraction. The amazing progress in the mathematical understanding of resonances in the last ten years is due largely to Zworski. He has notably settled a famous conjecture formulated by the physicist Regge on resonances thirty years ago. Zworski has also found the precise location of the shadow boundary in the diffraction of linear oscillatory waves by a convex boundary, thus proving a long standing conjecture of Keller and Rubinow.

Maciej Zworski est une sommité mondiale dans le domaine difficile et fondamental qui regroupe les équations aux différentielles partielles, la physique mathématique et les mathématiques appliquées. Il s'intéresse principalement à la théorie des résonnances et au problème de la diffraction. Au cours des dix dernières années, il a fait progresser de façon remarquable la compréhension mathématique des résonnances. Il a notamment résolu une célèbre conjecture formulée par le physicien Regge sur les résonnances il y a trente ans. Macjej Zworski a également trouvé l'emplacement précis du contour de l'ombre dans la diffraction d'ondes oscillatoires linéaires par un obstacle convexe, prouvant ainsi une conjecture de longue date de Keller et Rubinow.

## Borwein family honoured

*The Borwein Family*

The University of Western Ontario Alumni Association has presented the first "Western Family Citation," for professional achievement, to David and Bessie Borwein and their family. The text of the Citation from the Fall 1999 issue of the Western Alumni Gazette follows.

With four PhDs and an MD in the immediate family, the Borweins can certainly say there is a doctor in the house. Parents Bessie and David were both professors at Western, in anatomy and mathematics, respectively, and their children, Jonathan, Peter and Sarah inherited their love of discovery and learning.

David and Bessie married when they were students in South Africa. David graduated as an electrical engineer, and after a stint in the South African army switched to mathematics and was awarded a PhD by the University of London and ten years later a DSc. He is a Fellow of the Royal Society of Edinburgh. While working as a lecturer at St. Andrews University, Scotland, Western invited him as a visiting professor. The family came in 1963 and stayed. David was head of the mathematics department for 22 years and remains active in research, primarily in classical analysis. David has been President of the Canadian Mathematical Society and Jonathan is now President-elect.

A chance lunch meeting with Martin Hollenburg, a UWO anatomy professor, changed Bessie's life from lab instructor in botany to professor of anatomy, and eventually Associate Dean, Research, in the Faculty of Medicine. She spent much time raising public awareness of biomedical research and encouraging students to become informed judges of related ethical issues. Her work has been recognized through many awards, including the YWCA London Women of Distinction, the Commemorative Medal for the 125th Anniversary of the Confederation of Canada, the Ontario Medal for Good Citizenship, the Biomedical Science Ambassador's Award from Partners in Research and the Gordin Kaplan Award from the Canadian Federation of Biological Societies.

Peter and Jonathan are full professors at Simon Fraser University. Jonathan is a Fellow of the Royal Society of Canada and has received an honorary degree from Limoges University in September.

Jonathan and Peter developed algorithms used in setting new world records for calculating Pi. In 1993, they established the Centre for Experimental and Constructive Mathematics at Simon Fraser University with Jonathan as Director and Peter as Associate Director.

Jonathan, a Rhodes Scholar, was selected Shrum Professor of Science at SFU. He has played a significant role in developing the use of computers in mathematics. He is a cofounder of MathResources Inc., an interactive electronic tool for math education.

Peter, when an undergraduate at UWO, was elected to the Senate and served on several student and faculty committees. He is Deputy Director of the Pacific Institute of Mathematics. Peter's wife, Jennifer Moore, an MD, studied psychology at Western for two years and Jonathan's wife, Judith Scott Roots, is a Western grad (BA Social Science).

Sarah completed her first degree in mathematics and economics at Queen's University and an MSc in economics at Oxford as a Commonwealth Scholar. She has an image of her father so in love with his subject that he wrote mathematics on cocktail napkins at parties and on theatre programs. When she realized she didn't have that same passion for mathematics, she switched fields, completing an MD at the University of Toronto. Sarah is a medical doctor, currently living in Hong Kong. Her husband Andrew Nevin is a Western alumnus (computer science, economics). He is also a Rhodes Scholar and has a PhD in economics from Harvard.

# DU BUREAU DU PRÉSIDENT

*(see page 3 for the English version)*

Dans cet article, je vous entretiendrai de notre Réunion d'hiver tenue à Montréal en décembre dernier. Il me fait plaisir de répéter le même refrain à propos de nos réunions : ce fut un grand succès! En tout, 354 personnes se sont inscrites à la Réunion, une participation qui frôle le record établi l'hiver dernier à Kingston. Une telle participation aurait été inimaginable il y a quelques années, ce qui confirme l'efficacité de la nouvelle formule adoptée. En effet, nous mettons davantage l'accent sur la diversité des activités, en proposant notamment un grand nombre de séances, ainsi que sur la participation de la communauté locale à l'organisation de la réunion. La Réunion de Montréal a d'ailleurs atteint ces objectifs en offrant pas moins de onze séances mettant en scène 183 conférenciers. De nombreux membres de la communauté mathématique montréalaise, particulièrement ceux de l'établissement hôte, l'Université de Montréal, ont pris part à l'organisation de la Réunion. Je tiens à remercier tous ces organisateurs de leur bon travail, en particulier Michel Delfour, directeur de la Réunion, et Véronique Hussin, présidente du Comité de logistique local.

Plusieurs autres activités sont venues se greffer à la Réunion. Il y eut d'abord le symposium d'une journée pour célébrer le 30e anniversaire du Centre de recherches mathématiques (CRM), tenu le jour précédant notre Réunion. Le CRM, qui joue depuis 20 ans un rôle toujours accru dans le milieu des mathématiques au Canada, s'est valu une reconnaissance nationale et internationale pour ses réalisations au chapitre de la promotion de la recherche, de la formation des diplômés et de la sensibilisation du public.

Au cours des dix dernières années, deux autres instituts mathématiques canadiens se sont joints au CRM : les instituts Fields et Pacific (PIMS). Ces dernières années, ces instituts ont doté la communauté mathématique canadienne d'une nouvelle et inestimable infrastructure de recherche et de formation des diplômés. Ils jouent également un rôle prépondérant en ce qui concerne les échanges entre la communauté mathématique et les autres disciplines, les entreprises et l'industrie. Les dirigeants de la SMC et de ces instituts tentent depuis quelque temps de trouver des moyens de collaborer pour atteindre des objectifs communs.

Le premier carrefour emploi de la SMC, tenu immédiatement après la Réunion de Montréal, illustre parfaitement le type de collaboration recherchée. Il a été organisé par Christiane Rousseau, avec le soutien du CRM, de l'Institut des sciences mathématiques (ISM) et des deux réseaux de sensibilisation, RCM2 et MITACS. La SMC souhaite que les carrefours emplois fassent désormais partie intégrante de ses Réunions et que les instituts mathématiques et le réseau MITACS deviennent des partenaires réguliers de cette activité. Un carrefour emploi en collaboration avec MITACS est justement en cours de planification pour

Math 2000, le grand congrès conjoint qui aura lieu en juin à l'Université McMaster. Les organismes ci-dessus s'entendent pour dire que les emplois et les postes de chercheurs pour mathématiciens foisonnent dans le secteur privé, et qu'il incombe aux mathématiciens canadiens d'en informer les étudiants et de les aider à se préparer à occuper de tels emplois.

Passons maintenant à la réunion du Comité exécutif et à celle du Conseil d'administration, tenues en décembre. Comme je l'ai mentionné dans d'autres articles, un examen d'envergure des activités de la SMC est en cours. L'objectif visé : «revoir tous les aspects des activités de la SMC et formuler des recommandations quant à leur développement ou à leur modification». Cet examen et cette planification sont mis en oeuvre par plusieurs groupes de travail. Pour plus de détails sur ces groupes de travail, notamment sur leur mandat et leur composition, on se rendra au site Web de la SMC (http://cms.math.ca/CMS/Projects/-1998/futuref.html). Deux de ces groupes de travail (Finances et collecte de fonds et Soutien à la communauté mathématique) ont présenté leur rapport final au Conseil en décembre. Ils contiennent tout deux de nombreuses recommandations, que les comités permanents de la SMC et d'autres intervenants examinerons attentivement au cours des six prochains mois. Comme un grand nombre de ces recommandations sont liées à l'avenir de la SMC, elles concernent tous les membres. Nous vous invitons donc fortement à lire les rapports de ces comités et à nous transmettre vos commentaires et observations avant le début d'avril à l'adresse suivante : president@cms.math.ca.

Un troisième comité a aussi remis son rapport au Conseil en décembre. Un ancien groupe de travail (Budget et politique) avait recommandé l'examen des services électroniques et de Camel (le site Web de la SMC). Le comité chargé de cette tâche a donc été formé il y a un an et vient de présenter son rapport, que l'on peut aussi consulter sur Camel. Le Comité exécutif et le Conseil ont donné suite aux principales recommandations formulées dans le rapport, soit trouver un moyen de clarifier les responsabilités et le fonctionnement de Camel et de solidifier sa structure financière. Le Comité exécutif et le Conseil ont adopté une proposition visant à réduire la taille du Comité des services électroniques (CSE) et à en cibler davantage les activités. Ils ont en outre chargé le nouveau CSE de formuler des énoncés de politique sur les fonctions et les priorités de Camel, sa structure administrative et les descriptions de postes de son personnel.

J'aimerais remercier Lynn Batten (Finances et collecte de fonds), Ian Goulden (Services électroniques et Camel) et Kathryn Hare (Soutien à la communauté mathématique) de leur grande efficacité à la présidence des comités et groupes de travail ci-dessus. Merci également à tous les membres de ces comités de leur bon travail.

L'étape finale de la planification concernera surtout le Comité exécutif et commencera durant la seconde moitié de cette année. À ce jour, six groupes de travail ou comités ont remis leur rapport au Conseil, et deux autres (Publications et Stratégies administratives) doivent le faire en juin. Le Comité exécutif étudiera ensuite tous ces rapports et entreprendra l'élaboration d'une stratégie globale de mise en oeuvre des recommandations. Le rapport final sur la planification sera terminé en 2001.

## Book Review

*(GRAPH–continued from page 1)*

Chapter 2 of the book is entitled "Knights Errant." Bill explains how the problem of a Knight's tour on a chessboard leads to the more general problem of finding spanning subgraphs, and how the interest of that knight, Sir William Rowan Hamilton, on spanning circuits of the dodecahedral graph led to the theory of hamiltonian circuits.

Chapter 3 is entitled "Graphs within Graphs" and deals with f-factors in graphs. Naturally much of the discussion is devoted to the important case of 1-factors, that is subgraphs in which each vertex has valence unity. Bill explains how he obtained the theorem on the existence of a 1-factor in a graph, and how Maunsell later gave an alternative proof of the result.

Chapter 4, on "Unsymmetrical Electricity", deals with the dissections of equilateral triangles and parallelograms into unequal equilateral triangles. This is the analogue of the work in the first chapter on dissecting a square into smaller unequal squares.

Chapter 5 is called "Algebra in Graph Theory" and deals with many topics, especially the chromatic polynomial, the dichromatic polynomial, and the flow polynomial of a graph.

Chapter 6, on "Symmetry in Graphs," deals with rotors, stators and cages, and introduces that traveller "Serpens," the snake that moves along the edges of a graph under different rules for different problems (the cover of the book actually shows a graph with Serpens making his way through it).

Chapter 7, entitled "Graphs on Spheres," deals with planar graphs and leads to a discussion of Brooks's Theorem, Hadwiger's Conjecture, and the Four-Colour Theorem. It ends with an important sketch of the theory of bridges in a graph.

Chapter 8: "The Cats of Cheshire." This chapter explains how Bill was led to the definition and study of matroids.

Personally, I feel that, as well as being the father of graph theory, he deserves to also be called the father of matroid theory.

Chapter 9 explains the problem of "Reconstruction," the reconstruction of some property P of a graph from the known values of P for the subgraphs of the original graph.

*William Tutte*

Chapter 10, on "Planar Enumeration," describes how Bill solved many of the difficult and important problems in graphical enumeration for which he is so well known. In particular, he explains the importance of "rooting" in graphs, that is, specialization of a particular, vertex, edge, or face.

Chapter 11 is on "The Chromatic Eigenvalues" and includes Bill's notable result that $P(\tau, \tau\sqrt{5})$ is a constant multiple of $P^2(\tau, \tau^2)$, where t is the golden number defined by $\tau^2 = t + 1$. This led him to consider the relation of the Beraha numbers $B_n = 2 + 2cos(2\pi/n)$ to chromatic polynomials.

Chapter 12, entitled "In Conclusion," was written recently. In it, Bill looks back on the results outlined in the earlier chapters, and comments on developments that have taken place since he originally wrote these chapters for his 1984 course.

The bare summary of the chapters that I have just given can not do justice to either the style or the content of the book. Bill Tutte is an entertaining writer, and this work is marked by gentle wit and humour. Bill has an unusual ability to tell a story in a way that lets the reader share the enthusiasm that Bill felt in pursuing his research and that also lets the reader see some of the reasoning that underlay the creative ideas that spurred the developments of the results.

Some 20 years ago, I had the privilege of being a co-editor of the "Selected Papers of W.T. Tutte" (published by the Charles Babbage Research Centre, Box 272, St Norbert Postal Station, Winnipeg, R3V 1L6). At the time, I was struck by the enthusiasm and humour that Bill imparted to the commentaries he contributed concerning the genesis of each of his papers, the development of his ideas, and the relationship of the various results. The present volume is in exactly the same vein as his commentaries on the individual papers in his "Selected Papers"; the narrative provides one with insight into the workings of the mind of one of the most original and creative research mathematicians of our time.

Mathematics, and especially Graph Theory, is very fortunate that Bill Tutte is still with us and still active. His final Chapter in this present volume is marked by the same keen insight that he has displayed for well over 60 years. I am personally very grateful to him for serving as the first President (1990-1996) of the Institute of Combinatorics and its Applications; the growth and success of that organization owes much to his example and his leadership. At the British Combinatorial Conference in Canterbury (July, 1999), Bill delivered the Rado Lecture to a packed auditorium and showed that he had lost none of his ability to entrance the listeners with his own enthusiasm for Graph Theory and its manifold aspects.

# FROM THE INSTITUTES

## MITACS Gets a New Leader

Arvind Gupta of Simon Fraser University has been appointed Program Leader of MITACS, a federally funded Network of Centres of Excellence (NCE) devoted to industry-university research in the mathematical sciences.

"Professor Gupta brings to this job a tremendous wealth of new ideas and approaches, as well as the energy and drive to see them through. I think it is a very fortunate nomination for us," said Dr. Jacques Hurtubise, Director of the Centre de recherches mathématiques (CRM).

Dr. Gupta was one of the founders of MITACS as well as of the Pacific Institute for the Mathematical Sciences (PIMS). With PIMS, he served as SFU Site Director and Deputy Director from 1996 until May 1999. He was instrumental in the establishment of the highly successful PIMS industrial outreach strategy.

MITACS was launched in October 1998 as a joint project of Canada's three mathematical Institutes, PIMS, CRM and the Fields Institute for Research in Mathematical Sciences. "The leadership Dr. Gupta has shown at PIMS assures me that he is committed to building the relationship among the three institutes in partnership with MITACS," said Fields Institute Director Dr. Don Dawson.

The MITACS network represents a $6M annual investment by Canadian industry and the federal government. The network consists of 21 research projects addressing key issues in five sectors of the economy

that will be crucial for Canada in the next Century: Biomedical, Commercial/Industrial, Information Technology, Trading/Finance, and Manufacturing.

Each project brings together industrial and university scientific expertise from across the country; almost 200 Canadian scientists are participating in MITACS. A key objective of the network is the training of students. Towards this, more than 150 graduate students and postdoctoral fellows are involved with MITACS projects.

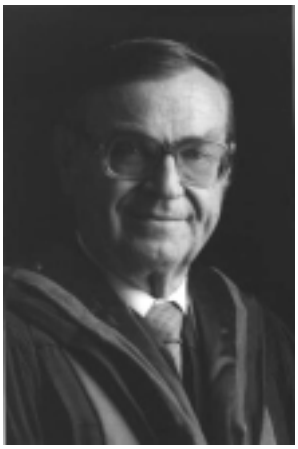
Dr. Gupta received his Ph.D. in 1991 from the University of Toronto and joined the School of Computing Science at Simon Fraser University, in September of that year. His main research interests are in the areas of combinatorics, optimization, and complexity theory.

"MITACS is a unique opportunity for Canada's mathematical scientists to make key contributions to the country's economy and develop world class research," said Dr. Gupta. "I feel very fortunate to be given the opportunity to work with the Canadian industrial and scientific communities in this endeavour."

Dr. Gupta will remain on the faculty of Simon Fraser University while taking an adjunct position at the University of Toronto, where the MITACS Administrative Head Office is located.

For more information, please contact Brenda Law or Sheena Kennedy (mitacs@mitacs.math.ca).

## OBITUARY / AVIS DE DÉCÈS



**Arnold J. Tingley**
**(1920 - 1999)**

Professor Arnold J.Tingley passed away unexpectedly on December 14, 1999.

Arnold Jackson Tingley was born June 9th, 1920, in New Brunswick and received his early education there. After service in World War II he graduated B.A.(summa cum laude) from Mount Allison University, going on to complete a Ph.D. in mathematics at the University of Minnesota. In 1953 Dr. Tingley joined the Faculty of Dalhousie University, teaching in the Mathematics Department. He was appointed Department Chairman 1966-73 and University Registrar 1973-85.

In addition he served terms at Dalhousie as Secretary of Senate, Secretary to the Board of Governors and Assistant to the President. During those years, Dr. Tingley had a profound influence on a great many of the developments that transformed Dalhousie from a small Maritime college to a research University. In particular, he was instrumental in the growth of the Mathematics Department and the establishment of its Ph.D. programme. He was appointed Professor Emeritus in 1988.

Dr. Tingley had a life-long interest in all aspects of education. He assisted in establishing the Transition Year Program at Dalhousie and was a founding member of the Halifax Grammar School. From 1959 to 1976 he was active in the summer school for teachers run by the Canadian Mathematical Congress (now the Canadian Mathematical Society), on both the teaching and administrative levels. He served the Society in many other capacities, including terms on its Education Committee, as Vice President, as Treasurer, and on its Board of Directors. He was also interested in curricular matters, working for a number of years on the curriculum committee of the Nova Scotia Department of Education.

Dr. Tingley is survived by his wife Bea, their children Daryl and Lois, and four grandchildren. Memorial donations may be made to the Arnold J. Tingley Fund through the Dalhousie Development Office.

### CMS MEMBERSHIP ...

The 2000 Membership Notices have been mailed. Please renew your membership now.

### ADHÉSION À LA SMC ...

Les avis d'adhésion 2000 était postés. S'il vous plaît renouveller votre adhésion maintenant.

# MATH 2000
# McMaster University
# Hamilton, Ontario
# June 10 - 13, 2000

**First Announcement**

McMaster University, the University of Waterloo, the Canadian Mathematical Society, the Canadian Applied and Industrial Mathematics Society, the Canadian Operational Research Society, the Canadian Society for History and Philosophy of Mathematics, the Canadian Undergraduate Mathematics Conference, and the the 14th Canadian Symposium on Fluid Dynamics have joined together to celebrate World Mathematical Year 2000. This joint meeting is to be held at McMaster University, Hamilton, Ontario from June 10 to 13, 2000 and will bring together researchers, educators and students from around the world. Please join us at MATH 2000.

All scientific activities will take place from Saturday, June 10 to Tuesday, June 13 at the campus of McMaster University, Hamilton (Ontario) Canada. A diverse programme is planned and detailed below.

The most up-to-date information concerning the programmes, including scheduling, is available at the following world wide web address:

http://www.cms.math.ca/Events/math2000

Meeting registration forms, abstract forms, and hotel accommodation forms will be published in the February 2000 issue of the *CMS Notes*, in other society publications, and will also be available on the website.

## Public Lecture

*Sunday, June 11, 7:00 p.m.*
**James Stewart, McMaster University**
*How to Enliven the Mathematics Classroom*

## Plenary Speakers

**Francis Clarke** (Lyon), *Control Theory*
**Ioannis Karatzas** (Columbia), *Financial Mathematics*
**Pierre Louis Lions** (Paris), *Nonlinear PDEs*
**Dusa McDuff** (SUNY, Stony Brook),
*Symplectic Geometry*
**David Mumford** (Brown), *Vision and Imaging*
**Eugene Myers** (Celera Genomics), *Mathematical Biology*
**Raymond Pierrehumbert** (Chicago),
*Geophysical Fluid Dynamics*
**Carl Pomerance** (Georgia),
*Cryptography and Number Theory*
**Maurice Queyranne** (UBC), *Operations Research*
**Lawrence Shampine** (Southern Methodist U), *Education*
**Lou van den Dries** (Illinois-Urbana), *Logic*
**Shing-Tung Yau** (Harvard), *PDEs* - to be confirmed
**Efim I. Zelmanov** (Yale), *Group Theory*

## Prize Lectures

**CMS Krieger-Nelson Lecture**
**C. Kanta Gupta**, University of Manitoba

**CAIMS Doctoral Prize**

## Symposia

By invitation of the Meeting Committee, there will be symposia in the following areas:

### *Algebraic Groups*
(Org: **Carl Riehm**, McMaster University)

James Arthur (Toronto), James Carrell (UBC), Dragomir Ž. Djoković (Waterloo), Bruce Gilligan (Regina), Andy R. Magid (Oklahoma), Kumar Murty (Toronto), Arturo Pianzola (Alberta), Lex E. Renner (Western Ontario), Carl Riehm (McMaster), David Wehlau (RMC).

### *Biofluid dynamics & medical science*
(Org: **Siv Sivaloganathan**, University of Waterloo)

James Drake (Hospital for Sick Children/Toronto), Tony Heenan (Queen's), E. Krause (Aerodynamisches Institut, Germany), M. Oberlack (Institut fuer Technische Mechanik, Germany), Katrin Rohlf (Waterloo), Bruce Rubin (Wake Forest University), W. Schroeder and M. Meinke (Aerodynamisches Institut, Germany), Marek Stastna (Waterloo).

### *Control Theory*
(Org: **Kirsten Morris**, University of Waterloo)

Francis Clarke (Université Lyon), Bruce Francis (Toronto), Kazifumi Ito (North Carolina State), Andrew Lewis (Queen's), Kirsten Morris (Waterloo), Hitay Ozbay (Ohio State), Richard Rebarber (Nebraska), David Russell (Virginia Polytechnic and State), Ron Stern (Concordia).

### *Cryptography & Number Theory*
(Org: **Hugh Williams**, University of Manitoba
and **Gary Walsh**, CSE, University of Ottawa)

Dan Bernstein (Illinois at Chicago), Tom Cusick (SUNY, Buffalo), John Friedlander (Toronto), Rob Lambert (Certicom Corp.), Kumar Murty (Toronto), Renate Scheidler (Delaware), Oliver Schirokauer (Oberlin College), Jon Sorenson (Butler University) , Doug Stinson (Waterloo), Scott Vanstone (Certicom Corp., Mississauga), Gary Walsh (CSE, Ottawa), Robert Zuccherato (Entrust Technologies, Ottawa).

### *Education*
(Org: **Eric Muller**, Brock University
and **Robert Corless**, University of Western Ontario)

*Education 1*
*Models for the education of future school teachers*

Andrew Adler (UBC), Kathy Heinrich (Regina), David Henderson (Cornell), Bernard Hodgson (Laval), Andy Liu (Alberta), Pat Rogers and Walter Whiteley (York), Maureen Tingley (New Brunswick), Harley Weston (Regina).

*Education 2*
*Journey through Calculus*

Bill Ralph (Brock).

*Education 3*
*Technology in the Teaching and Learning of Differential Equations*

Speakers to be announced.

### *Financial Mathematics*
(Org: **Luis Seco**, University of Toronto)

Speakers to be announced.

### *Geophysical Fluid Dynamics*
(Org: **Kevin Lamb**, University of Waterloo
and **Richard Greatbatch**, Dalhousie University)

Balu Nadiga (Los Alamos National Laboratory), David Straub (McGill).

### *Group Theory*
(Org: **Olga Kharlampovich**, McGill University)

Lisa Carbone (Harvard), John Dixon (Carleton), Steve Gersten (Utah), Bob Gilman (Stevens Institute), Olga Kharlampovich (McGill), Alexei Miasnikov(City College of CUNY), Akbar Rhemtulla (Alberta), Luis Ribes (Carleton), Vladimir Shpilrain (City College of CUNY).

### *History of Mathematics at the Dawn of a New Millennium*
(Org: **Tom Archibald**, Acadia University)

Speakers to be announced.

### *Imaging & Vision*
(Org: **Ed Vrscay** and **Alan Law**,
University of Waterloo)

Peter Belhumeur (Yale), Donald Geman (U. Massachusetts), Jacques Levy-Vehel (INRIA Rocquencourt, France), Ross Mitchell (Western Ontario), David Mumford (Brown), Dietmar Saupe (Leipzig).

### *Industrial Statistics*
(Org: **N. Balakrishnan**, McMaster University)

Speakers to be announced.

### *Logic*
(Org: **Bradd Hart**, McMaster University and **Claude Laflamme**, University of Calgary)

Luc Bélair (UQAM), Max Burke (UPEI), Ilijas Farah (Rutgers), Klaus Peter Hart (Delft), Salma Kuhlmann (Saskatchewan), David Pierce (McMaster), Sergei Starchenko (Notre Dame), Simon Thomas (Rutgers), Stevo Todorcevic (CNRS, Paris VII), Justin Moore (Toronto).

### *Mathematical Biology*
(Org: **Robert Miura**, University of British Columbia)

Jacques Belair (Montreal), David Bryant (CRM), Sue Ann Campbell (Waterloo), Gerda de Vries (Alberta), Michael Doebeli (UBC), Roderick Edwards (Victoria), Herb Freedman (Alberta), Leon Glass (McGill), John Hsieh (Toronto), Lila Kari (Western Ontario), Leah Keshet (UBC), Yue-Xian Li (UBC), Andre Longtin (Ottawa), Michael Mackey (McGill), Robert Miura (UBC), Shigui Ruan (Dalhousie), Frances Skinner (Toronto), Jack Tsuzynski (Alberta), Pauline van den Driessche (Victoria).

### *Math on the Internet*
(Org: **June Lester**, Simon Fraser University)

Speakers to be announced.

### *Operations Research*
(Org: **Rick Caron**, University of Windsor)

Speakers to be announced.

### *Partial Differential Equations*
(Org: **Pengfei Guan**, McMaster University)

Urban Cegrell (Univ. of Umea, Sweden) Zheng-chao Han (Rutgers), Jiaxing Hong (Fudan Univ., China), Xiaojun Huang (Rutgers University), Howard Jacobowitz (Rutgers), Song-Ying Li (UC Irvine), Hayato Nawa (Nagoya, Japan) Joel Smoller (Michigan), Catherine Sulem (Toronto), Daniel Tataru (Northwest), John Toth (McGill), Richard Wheeden (Rutgers).

### *Symplectic Geometry*

(Org: **Lisa Jeffrey**, University of Toronto)

Maxim Braverman (Northeastern), Maia Fraser (ETH, Zurich), Viktor Ginzburg (California-Santa Cruz), Rebecca Goldin (Maryland), Victor Guillemin (MIT), Tara Holm (MIT), Jacques Hurtubise (CRM), Lisa Jeffrey (Toronto), Boris Khesin (Toronto), Francois Lalonde (UQAM), Eugene Lerman (Illinois-Urbana), Steven Lillywhite (Toronto), Eyal Markman (Massachusetts-Amherst), Eckhard Meinrenken (Toronto), John Millson (Maryland), Reyer Sjamaar (Cornell), Jennifer Slimowitz (Courant Institute), Sue Tolman (Illinois-Urbana), Lisa Traynor (Bryn Mawr College), Jonathan Weitsman (California-Santa Cruz), Catalin Zara (MIT).

### *Topology of Manifolds*

(Org: **Ronnie Lee**, Yale University
and **Ian Hambleton**, McMaster University)

Hans Boden (Ohio State), Frank Connolly (Notre Dame), James F. Davis (Indiana), Ross Geoghegan (Binghamton), Chris Herald (Nevada), Heather Johnston (Amherst), Lowell Jones (Stony Brook), Slawomir Kwasik (Tulane), Tian-Ju Li (Princeton), Michael McCooey (McMaster), Liviu Nicolaescu (Notre Dame), Erik Pederson (Binghamton), Ranja Roy (Union), Darius Wilczynski (Utah State), Bruce Williams (Notre Dame).

### *Contributed Papers Session*

Contributed papers of 15 minutes duration are invited. Abstracts for CMS contributed papers should be prepared as specified below. For an abstract to be eligible, the abstract must be received before **February 28, 2000**. The abstract must be accompanied by its contributor's registration form and payment of the appropriate fees.

### *Graduate Student Poster Session*

There will be a Poster Session for Graduate Students, organized by Sue Ann Campbell, University of Waterloo, on Saturday, June 10 from 6:00 to 7:30 p.m. A reception will be held during this Poster Session.

Anyone interested in making a presentation should send an abstract to gs-abstracts@cms.math.ca, following directions given below, and making sure to note your wish to participate in the Poster Session. For an abstract to be eligible, the abstract must be received before **February 28, 2000**. The abstract must be accompanied by its contributor's registration form and payment of the appropriate fees.

### *Travel Grants for Graduate Students*

Limited funds are available to partially fund the travel and accommodation costs for graduate students. For more information, please contact the Meeting Committee at gradtravel-math2000@cms.math.ca.

## Social Events

A welcoming reception will be held during registration on Friday evening, June 9, from 7:00 p.m. to 9:00 p.m. A cash bar will be available.

The Delegates' Luncheon will be held on Saturday, June 10 at McMaster University. A ticket to this luncheon is included in all registration fee categories.

Everyone is also invited to a reception on Sunday, June 11, from 6:00 to 7:00 p.m. at the Celebration Banquet Hall, preceding the Public Lecture given by James Stewart (McMaster) at 7:00 p.m.

A banquet will be held on Monday, June 12, from 7:30 p.m. at Royal Botanical Gardens, preceded by a cash bar at 6:30 p.m. Tickets to this event are available at $50.00 each. Bus service will be provided to and from this event.

Since limited catering facilities are available at McMaster University, luncheon tickets may be purchased for Sunday, Monday and Tuesday.

Coffee and juice will be available during the scheduled breaks.

## Related Activities

**MITACS General Meeting:** The 1st General Meeting of MITACS will be held on June 6 and 7 at the University of Toronto. For complete information regarding registration, contact Bradd Hart at bhart@fields.utoronto.ca

**CMS Job Fair:** The 2nd CMS Job Fair will be held on June 6 and 7, in conjunction with the MITACS General Meeting, at the University of Toronto. For complete information regarding registration and submission of resumés, contact Bradd Hart at bhart@fields.utoronto.ca

**Symposium on the Legacy of John Charles Fields:** This special symposium will take place on June 7, 8 and 9, 2000 at the The Royal Ontario Museum, Toronto, Ontario. For information, contact The Fields Institute at geninfor@fields.utoronto.ca or consult the website at http://www.fields.utoronto.ca/ jcfields-legacy.html

**CSHPM:** The Canadian Society for History and Philosophy of Mathematics is holding its 2000 Annual Meeting at McMaster University on June 10,11,12. Participants should complete the MATH 2000 registration form. For more information on the CSHPM programme, please contact Thomas Archibald at tom.archibald@acadiau.ca or consult the CSHPM website
at http://kingsu.ab.ca/˜ glen/cshpm/home.htm

**CUMC:** The 2000 Canadian Undergraduate Mathematics Conference will take place June 6-10 at McMaster University. For information regarding the programme and registration, please contact Gabriella Couto at cumc2000@cms.math.ca or consult the CUMC website at http://cumc.math.ca/cumc2000/

**IMO Alumni Reunion:** This special reunion celebrating 20 years of Canadian participation at the International Mathematical Olympiad, will be held from 11:30 a.m. to 3:00 p.m. on June 11 in Toronto. For more information on the programme, please contact Richard Hoshino at IMO-reunion@cms.math.ca

## Business Meetings

The CMS, CAIMS and CSHPM will be holding business meetings during the course of MATH 2000. Additional information will be provided in later announcements and may be found on the societies' websites.

The CAIMS General Meeting will be held from 12:30 to 2:00 p.m. on Monday, June 12.

The CMS Executive Committee Meeting will meet on Thursday, June 8, from 9:00 a.m. to 3:00 p.m. in Suite 1111 of the Royal Connaught Howard Johnson Plaza.

The CMS Development Group Luncheon will be held from 11:00 a.m. to 1:00 p.m. on Friday, June 9 in the Dundurn Room of the Royal Connaught Howard Johnson Plaza.

The CMS Board of Directors meeting will be held from 1:30 to 6:30 p.m. on Friday, June 9 in the Ontario Room of the Royal Connaught Howard Johnson Plaza.

The CMS Annual General Meeting will be held will be held from 12:30 to 2:00 p.m. on Monday, June 12.

The CSHPM Business Meeting will be held from 12:00 to 2:00 p.m. on Monday, June 12.

## Exhibits

Exhibits will be open during specified hours during the conference.

## Submission of Abstracts

**Titles** for plenary speakers, prize lecturers, invited symposia speakers and contributed papers will appear in the **April** issue of the *CMS Notes*. An updated list will appear in the **May** issue. All **abstracts** will be published in the meeting programme and will also be available at *http://camel.math.ca/CMS/Events/math2000.*

**All speakers should send the title of their talk to their organizers before January 4, 2000, and submit their abstract as instructed by their organizers.**

**Plenary Speakers, Prize Lecturers and Invited Symposia Speakers:** Abstracts may be sent electronically, following instructions given below. Abstracts may also be prepared on the standard form available from the session organizer or on the website. Abstracts should be sent to the Abstracts Coordinator, MATH 2000, CMS Executive Office, 577 King Edward, Suite 109, Ottawa, Ontario CANADA K1N 6N5 **by February 1, 2000**.

**Graduate Student Poster Session and Contributed Papers:** Abstracts may be sent electronically, following instructions given below. Abstracts may also be prepared on the standard form available from the **February 2000** issue of the *CMS Notes* or on the website. Abstracts should be sent to the Abstracts Coordinator, MATH 2000, CMS Executive Office, 577 King Edward, Suite 109, Ottawa, Ontario CANADA K1N 6N5 **by February 28, 2000**.

**Electronic submission of abstracts:** Files including the speaker's name, affiliation, complete address, title of talk, and abstracts may be sent to abstracts@cms.math.ca (speakers), gs-abstracts@cms.math.ca (graduate student poster session) or cp-abstracts@cms.math.ca (contributed papers).

*Please note the above deadlines for the submission of your abstract.*

## Registration

The Canadian Mathematical Society will be handling registrations for MATH 2000. Registration forms will appear in the **February 2000** issue of the *CMS Notes* and will be published in other society publications as well. Forms are also available from:

MATH 2000 Registration
CMS Executive Office
577 King Edward, Suite 109
P.O. Box 450, Station A
Ottawa, Ontario CANADA K1N 6N5
Tel: 613-562-5702
FAX: 613-565-1539
Email: meetings@cms.math.ca

**Electronic pre-registration** is available at http://camel.math.ca/CMS/Events/math2000
Payment for preregistration may be made by cheque, or by VISA or MasterCard. Although registration fees are given in Canadian dollars, delegates may send cheques in US dollars by contacting their financial institution for the current exchange rate.

Please note that **payment must be received on or before May 15 in order to qualify for reduced rates**.

| | Before May 15 | After May 15 |
|---|---|---|
| Plenary speakers/prize lecturers | $ 0 | $ 0 |
| Session speakers/organizers | 135 | 135 |
| Delegates with grants | 270 | 350 |
| Delegates without grants | 135 | 175 |
| One-day fee | 135 | 175 |
| Postdocs, retired, students, unemployed | 50 | 50 |
| Banquet (free for plenary/prize speakers) | 50 | 50 |
| Lunch (tickets required for Sunday-Tuesday)-each | 10.50 | 10.50 |

## Refund Policy

Delegates wishing to cancel their registration must notify the CMS Executive Office **in writing before June 1** to receive a refund less a $40 processing fee. Those whose contributed paper has not been accepted will upon request be fully refunded.

## Accommodation

It is recommended that those attending the conference book early to avoid disappointment. Blocks of rooms have been reserved at the locations given below and will be held until **May 8, 2000**. Reservations not made by that date will be on a request only, space available basis. Rates quoted are in Canadian dollars.

It should be noted that most of the hotels are at some distance from the university but are generally accessible with public transportation. The closest is the Visitors Inn, which is approximately 1 kilometer from the university. The McMaster residences border on a wooded area surrounding "Cootes Paradise", the western tip of Lake Ontario.

**Reservation Deadline: May 8, 2000**

**Ramada Plaza Hotel**
150 King Street East, Hamilton, ON L8N 1B2
Check-in: 15:00; Check-out: 12:00 noon
Applicable taxes: GST (7%), hotel tax (5%)
Phone: 905-528-3451 FAX: 905-525-8638
Rates: $99, single/double occupancy
$10 per additional adult
(continental breakfast included)

**Royal Connaught Howard Johnson Plaza**
112 King Street East, Hamilton, ON L8N 1A8
Check-in: 15:00; Check-out: 12:00
Applicable taxes: GST (7%), hotel tax (5%)
Phone: 905-546-8111 FAX: 905-546-8118
Rates: $85, single/double/triple/quad occupancy
$10, rollaway per day

**Holiday Inn Burlington**
3063 South Service Service Rd., Burlington, ON L7N 3E9
Check-in: 15:00; Check-out: 12:00 noon
Applicable taxes: GST (7%), hotel tax (5%)
Phone: 905-639-4443 FAX: 905-333-4033
Rates: $109, single/double occupancy

Note: Holiday Inn Burlington is not easily accessible by public transportation. A car may be needed.

**Visitors Inn**
649 Main Street West, Hamilton, ON L8S 1A2
Check-in: 14:00; Check-out: 11:00 am
Applicable taxes: GST (7%), hotel tax (5%)
Phone: 905-529-6979 FAX: 905-529-6979
Rates: $79, single occupancy
$84, double occupancy

**McMaster Residence**
Housing & Conference Services, Commons Building 129B
McMaster University, 1280 Main Street West
Hamilton, ON L8S 4K1
Check-in: 7:00 am to 11:00 pm; Check-out: 12:00
Applicable taxes: GST (7%), hotel tax (5%)
Phone: 905-525-9140, ext. 24781 FAX: 905-529-3319
Email: confs@mcmaster.ca
Rates: $39.75 per person, single occupancy
$32.75 per person, double occupancy
rates include breakfast, linens, towels, parking

For McMaster Residence, the Accommodation Reservation Form should be sent with full payment for your entire stay. Only requests accompanied with full payment will be confirmed. When calculating total, please add 12% taxes to the above rates.

In all cases, delegates must make their own reservations. The conference rate is extended up to two days pre- and post-convention. Please mention that you are participating in MATH 2000.

**Accommodation cancellations:** For the hotels, reservations will be held until 18:00 on the arrival day only, unless you provide a deposit for one night or the reservation is guaranteed by a major credit card. Cancellation may be made up to 6:00 pm on the day of arrival.

For McMaster Residence, refunds will be granted if written notice of cancellation is received by Housing & Conference Services 72 hrs prior to arrival date. Cancellations are subject to a $10 administrative fee.

## Child Care

Information regarding child care options will be posted to our website as it becomes available.

## Travel

**The City of Hamilton:** Detailed information regarding the City of Hamilton, including Tourism Information, local weather and climate, site and street maps are available at the website http://www.city.hamilton.on.ca/

**Travel by Air:** Three airports within normal commuting distance provide non stop flights to all major Canadian, United States and principal Mexican cities. Hamilton International Airport is located approximately 8 km southwest of the City of Hamilton in the Township of Glanbrook, 15 minutes from downtown Hamilton (60 minutes from downtown Toronto). Lester B. Pearson International Airport is located 68 km east of Hamilton-Wentworth, approximately a 45 minute drive from downtown Hamilton. Buffalo International Airport is approximately 110 km or a one and a half hour drive by car, from Hamilton.

**Shuttle Service from Pearson Airport:** Airways Transit runs a Shuttle Service from Pearson International Airport in Toronto to Hamilton. A conference rate of $29 Cdn one-way (including GST) is available to those who reserve ahead of time. Fares are one-way. Please pay the driver.

Reservations can be made in several ways:
telephone - 905-689-4460

email - infohamilton@airwaystransit.com
web - http://www.airwaystransit.com/reservations.html

To reserve by phone or by email, please be ready to provide the following information: Name, email address, telephone number, conference name (MATH 2000), detailed Pearson arrival and departure information including flight numbers and arrival/departure dates and times, local destination address.

All candidates MUST identify themselves as attending MATH 2000 at the time of the booking in order to receive the special rate.

**Travel by Rail:** You can travel by VIA or GO train from Toronto to Aldershot. The trip takes approximately 40 minutes. Local bus service is available from Aldershot to McMaster University. A taxi ride to downtown Hamilton takes approximately 15 minutes and cost approximately $16 one-way.

**Parking at the Hotels and McMaster:** Information regarding parking at the hotels and at McMaster University will be posted to our website as it becomes available.

## Acknowledgements

Support from the following is gratefully acknowledged:
- Centre de recherches mathématiques
- The Fields Institute for Research in Mathematical Sciences
- The Pacific Institute for the Mathematical Sciences
- McMaster University
- University of Waterloo.

The participating societies of MATH 2000 wish to acknowledge the contribution of the members of the Meeting Committee for organizing this meeting and presenting these exciting scientific, educational, and social programs. Thanks are also extended to the many session organizers for their participation in this unique event.

## Meeting Committee

**Programme**
*Meeting Director:* Ian Hambleton (McMaster)
Sue Ann Campbell (Waterloo),
Niky Kamran (McGill),
Richard Kane (Western),
William Langford (Guelph),
Anna Lawniczak (Guelph),
Siv. Sivaloganathan (Waterloo),
Edward Vrscay (Waterloo),
Graham Wright (CMS ex-officio).

**Local Arrangements**
*Chair:* Carl Riehm (McMaster)
N. Balakrishnan (McMaster),
Monique Bouchard (CMS ex-officio),
Bradd Hart (McMaster),
Pamela Penny (McMaster),
Gail Wolkowicz (McMaster).

# MATH 2000
# Université McMaster
# Hamilton (Ontario)
# 10-13 juin 2000

**Première Annonce**

L'Université McMaster, l'Université de Waterloo, la Société mathématique du Canada, la Société canadienne de mathématiques appliquées et industrielles, la Société canadienne de recherche opérationelle, la Société canadienne d'histoire et de philosophie des mathématiques, le Congrès canadien des étudiants en mathématiques et le Quatorzième Symposium sur la Dynamique des Fluides s'unissent pour célébrer l'an 2000, année internationale des mathématiques. Cette réunion conjointe aura lieu à l'Université McMaster, à Hamilton (Ontario), du 10 au 13 juin 2000. Nous invitons les chercheurs, enseignants et étudiants du monde entier à se joindre à nous pour cette célébration unique.

Les activités scientifiques se tiendront sur le campus de l'Université McMaster, à Hamilton (Ontario), du samedi 10 juin au mardi 13 juin 2000. Nous avons prévu une foule d'activités, que nous vous présentons ci-dessous.

Vous trouverez l'information la plus récente sur les programmes, y compris les horaires, à l'adresse Web suivante :

http://www.smc.math.ca/Events/math2000

Vous trouverez les formulaires d'inscription, de résumé et de réservation d'hôtel dans le numéro de février 2000 des *Notes de la SMC*, ainsi que dans les publications des autres sociétés participantes. Ils seront aussi publiés sur notre site Web.

## Conférence publique

*Le dimanche 11 juin, 19 h*
**James Stewart, Université McMaster**
*How to Enliven the Mathematics Classroom*

## Conférenciers principaux

**Francis Clarke** (Lyon), *Théorie de Contrôle*
**Ioannis Karatzas** (Columbia), *Mathématiques financières*
**Pierre Louis Lions** (Paris), *Équations aux dérivées partielles non-linéaires*
**Dusa McDuff** (SUNY, Stony Brook),
*Géométrie symplectique*

**David Mumford** (Brown), *Vision et traitement d'images*
**Eugene Myers** (Celera Genomics), *Biologie mathématique*
**Raymond Pierrehumbert** (Chicago),
*Dynamique des fluides en géophysique*
**Carl Pomerance** (Georgia),
*Cryptographie et théorie des nombres*
**Maurice Queyranne** (UBC), *Recherche opérationnelle*
**Lawrence Shampine** (Southern Methodist U), *Enseignement*
**Lou van den Dries** (Illinois-Urbana), *Logique*
**Shing-Tung Yau** (Harvard), *Équations aux dérivées partielles* - à confirmer
**Efim I. Zelmanov** (Yale), *Théorie des groupes*

## Conférences des lauréats

**Conférence Krieger-Nelson de la SMC**
**C. Kanta Gupta**, Université du Manitoba

**Prix de doctorat de la SCMAI**

## Symposiums

Sur invitation du comité de coordination, il y aura des symposiums sur les thèmes suivants :

### *Groupes algébriques*
(Org: **Carl Riehm**, Université McMaster)

James Arthur (Toronto), James Carrell (UBC), Dragomir Ž. Djoković (Waterloo), Bruce Gilligan (Regina), Andy R. Magid (Oklahoma), Kumar Murty (Toronto), Arturo Pianzola (Alberta), Lex E. Renner (Western Ontario), Carl Riehm (McMaster), David Wehlau (RMC).

### *Dynamique des biofluides et sciences médicales*
(Org: **Siv Sivaloganathan**, Université de Waterloo)

James Drake (Hospital for Sick Children/Toronto), Tony Heenan (Queen's), E. Krause (Aerodynamisches Institut, Germany), M. Oberlack (Institut fuer Technische Mechanik, Allemagne), Katrin Rohlf (Waterloo), Bruce Rubin (Wake Forest University), W. Schroeder et M. Meinke (Aerodynamisches Institut, Germany), Marek Stastna (Waterloo).

### *Théorie de Contrôle*
(Org: **Kirsten Morris**, Université de Waterloo)

Francis Clarke (Université Lyon), Bruce Francis (Toronto), Kazifumi Ito (North Carolina State), Andrew Lewis (Queen's), Kirsten Morris (Waterloo), Hitay Ozbay (Ohio State), Richard Rebarber (Nebraska), David Russell (Virginia Polytechnic and State), Ron Stern (Concordia).

### *Cryptographie et Théorie des nombres*
(Org: **Hugh Williams**, Université dU Manitoba et **Gary Walsh**, CST, Université d'Ottawa)

Dan Bernstein (Illinois-Chicago), Tom Cusick (SUNY, Buffalo), John Friedlander (Toronto), Rob Lambert (Certicom Corp.), Kumar Murty (Toronto), Renate Scheidler (Delaware), Oliver Schirokauer (Oberlin College), Jon Sorenson (Butler University) , Doug Stinson (Waterloo), Scott Vanstone (Certicom Corp., Mississauga), Gary Walsh (CST, Ottawa), Robert Zuccherato (Entrust Technologies, Ottawa).

### *Enseignement*
(Org: **Eric Muller**, Université Brock et **Robert Corless**, Université Western Ontario)

*Enseignement 1*
*Modèles de la formation initiale des maîtres*

Andrew Adler (UBC), Kathy Heinrich (Regina), David Henderson (Cornell), Bernard Hodgson (Laval), Andy Liu (Alberta), Pat Rogers and Walter Whiteley (York), Maureen Tingley (Nouveau-Brunswick), Harley Weston (Regina).

*Enseignement 2*
*Visite de l'univers du calcul*

Bill Ralph (Brock).

*Enseignement 3*
*La technologie au service de l'enseignement et de l'apprentissage des équations différentielles*

Liste de conférenciers à venir.

### *Mathématiques financières*
(Org: **Luis Seco**, Université de Toronto)

Liste de conférenciers à venir.

### *Dynamique des fluides en géophysique*
(Org: **Kevin Lamb**, Université de Waterloo et **Richard Greatbatch**, Université Dalhousie)

Balu Nadiga (Los Alamos National Laboratory), David Straub (McGill).

### *Théorie des groupes*
(Org: **Olga Kharlampovich**, Université McGill)

Lisa Carbone (Harvard), John Dixon (Carleton), Steve Gersten (Utah), Bob Gilman (Stevens Institute), Olga Kharlampovich (McGill), Alexei Miasnikov(City College-CUNY), Akbar Rhemtulla (Alberta), Luis Ribes (Carleton), Vladimir Shpilrain (City College-CUNY).

### *L'histoire des mathématiques à l'aube d'un nouveau millénaire*
(Org: **Tom Archibald**, Université Acadia)

Liste de conférenciers à venir.

### *Vision et traitement d'images*

(Org: **Ed Vrscay** et **Alan Law**, Université de Waterloo)

Peter Belhumeur (Yale), Donald Geman (U. Massachusetts), Jacques Levy-Vehel (INRIA Rocquencourt, France), Ross Mitchell (Western Ontario), David Mumford (Brown), Dietmar Saupe (Leipzig).

### *Statistique industrielle*

(Org: **N. Balakrishnan**, Université McMaster)

Liste de conférenciers à venir.

### *Logique*

(Org: **Bradd Hart**, Université McMaster et **Claude Laflamme**, Université de Calgary)

Luc Bélair (UQAM), Max Burke (UPEI), Ilijas Farah (Rutgers), Klaus Peter Hart (Delft), Salma Kuhlmann (Saskatchewan), David Pierce (McMaster), Sergei Starchenko (Notre Dame), Simon Thomas (Rutgers), Stevo Todorcevic (CNRS, Paris VII), Justin Moore (Toronto).

### *Biologie mathématique*

(Org: **Robert Miura**, Université de la Colombie-Britannique)

Jacques Bélair (Montréal), David Bryant (CRM), Sue Ann Campbell (Waterloo), Gerda de Vries (Alberta), Michael Doebeli (UBC), Roderick Edwards (Victoria), Herb Freedman (Alberta), Leon Glass (McGill), John Hsieh (Toronto), Lila Kari (Western Ontario), Leah Keshet (UBC), Yue-Xian Li (UBC), Andre Longtin (Ottawa), Michael Mackey (McGill), Robert Miura (UBC), Shigui Ruan (Dalhousie), Frances Skinner (Toronto), Jack Tsuzynski (Alberta), Pauline van den Driessche (Victoria).

### *Mathématiques sur l'Internet*

(Org: **June Lester**, Université Simon Fraser)

Liste de conférenciers à venir.

### *Recherche opérationnelle*

(Org: **Rick Caron**, Université de Windsor)

Liste de conférenciers à venir.

### *Équations aux dérivées partielles*

(Org: **Pengfei Guan**, Université McMaster)

Urban Cegrell (Univ. of Umea, Suède) Zheng-chao Han (Rutgers), Jiaxing Hong (Fudan Univ., Chine), Xiaojun Huang (Rutgers University), Howard Jacobowitz (Rutgers), Song-Ying Li (UC Irvine), Hayato NAWA (Nagoya, Japon) Joel Smoller (Michigan), Catherine Sulem (Toronto), Daniel Tataru (Northwest), John Toth (McGill), Richard Wheeden (Rutgers).

### *Géométrie symplectique*

(Org: **Lisa Jeffrey**, Université de Toronto)

Maxim Braverman (Northeastern), Maia Fraser (ETH, Zurich), Viktor Ginzburg (California-Santa Cruz), Rebecca Goldin (Maryland), Victor Guillemin (MIT), Tara Holm (MIT), Jacques Hurtubise (CRM), Lisa Jeffrey (Toronto), Boris Khesin (Toronto), Francois Lalonde (UQAM), Eugene Lerman (Illinois-Urbana), Steven Lillywhite (Toronto), Eyal Markman (Massachusetts-Amherst), Eckhard Meinrenken (Toronto), John Millson (Maryland), Reyer Sjamaar (Cornell), Jennifer Slimowitz (Courant Institute), Sue Tolman (Illinois-Urbana), Lisa Traynor (Bryn Mawr College), Jonathan Weitsman (California-Santa Cruz), Catalin Zara (MIT).

### *Topologie des variétés*

(Org: **Ronnie Lee**, Université Yale et **Ian Hambleton**, Université McMaster)

Hans Boden (Ohio State), Frank Connolly (Notre Dame), James F. Davis (Indiana), Ross Geoghegan (Binghamton), Chris Herald (Nevada), Heather Johnston (Amherst), Lowell Jones (Stony Brook), Slawomir Kwasik (Tulane), Tian-Ju Li (Princeton), Michael McCooey (McMaster), Liviu Nicolaescu (Notre Dame), Erik Pederson (Binghamton), Ranja Roy (Union), Darius Wilczynski (Utah State), Bruce Williams (Notre Dame).

### *Communications libres*

Nous lançons un appel de communications libres de 15 minutes chacune. Les résumés devront respecter les critères précisés ci-dessous et nous parvenir **au plus tard le 28 février 2000**. Nous demandons à chacun de joindre au résumé le formulaire et le règlement des frais d'inscription.

### *Présentations des étudiants diplômés (affiches)*

Une séance de présentations d'étudiants diplômés est organisée par Sue Ann Campbell, de l'Université de Waterloo. La séance aura lieu le samedi 10 juin, de 18 h à 19 h 30. Une réception aura lieu pendant les présentations.

Toute personne qui souhaiterait faire une présentation est priée de faire parvenir son résumé à ed-resumes@smc.math.ca en suivant les directives ci-dessous et en indiquant son désir de participer à la séance de présentations des étudiants diplômés. Seuls les résumés reçus avant le **28 février 2000** seront admissibles. L'auteur doit joindre à son résumé son formulaire d'inscription et le paiement de ses droits d'inscription.

### *Subventions pour étudiants diplômés*

Les étudiants diplômés ont accès à un fonds limité pour financer une partie de leurs frais de déplacement. Pour de plus amples informations, veuillez communiquer avec le Comité de coordination à l'adresse suivante : gradtravelmath2000@cms.math.ca.

## Activités sociales

Une réception d'accueil avec bar payant aura lieu le vendredi 9 juin, de 19 h à 21 h, pendant l'inscription.

Le lunch des participants aura lieu le samedi 10 juin à l'Université McMaster. Un billet pour ce repas est inclus dans toutes les trousses d'inscription.

Tous les participants sont invités à une réception qui sera donnée au Celebration Banquet Hall le dimanche 11 juin, de 18 h à 19 h, juste avant la conférence publique de James Stewart (McMaster).

Un banquet aura lieu le lundi 12 juin, aux Royal Botanical Gardens, à 19 h 30. Un bar payant sera ouvert à 18 h 30. Le prix des billets pour le banquet est de 50 $. Le transport aller-retour par autobus sera fourni.

Puisque la capacité d'accueil à l'Université McMaster est limitée, nous vous prions de vous procurer des billets pour les lunchs du dimanche, du lundi et du mardi midi.

Café et jus seront offerts pendant les pauses.

## Activités connexes

**Assemblée générale du projet MITACS :** La première assemblée générale du Réseau de centres d'excellence (RCE) en mathématiques des technologies de l'information et des systèmes complexes (MITACS) aura lieu les 6 et 7 juin à l'Université de Toronto. Pour de plus amples renseignements concernant l'inscription, veuillez communiquer avec Bradd Hart, bhart@fields.utoronto.ca

**Carrefour emploi de la SMC :** Le deuxième Carrefour emploi de la SMC aura lieu les 6 et 7 juin à l'Université de Toronto, dans le cadre de l'AG du projet MITACS. Pour de plus amples renseignements concernant l'inscription et l'envoi de curriculum vitae, veuillez communiquer avec Bradd Hart, bhart@fields.utoronto.ca

**Symposium sur l'héritage de John Charles Fields :** Ce symposium aura lieu les 7, 8 et 9 juin, au Musée royal de l'Ontario à Toronto. Pour de plus amples renseignements, veuillez communiquer avec l'Institut Fields, geninfor@fields.utoronto.ca, ou consulter le site Web au http://www.fields.utoronto.ca/jcfields-legacy.html

**SCHPM :** La réunion 2000 de la Société canadienne d'histoire et de philosophie des mathématiques aura lieu du 10 au 12 juin à l'Université McMaster. Les participants sont invités à s'inscrire en utilisant le formulaire d'inscription pour MATH 2000. Pour de plus amples renseignements sur le programme, veuillez communiquer avec Thomas Archibald (tom.archibald@acadiau.ca) ou consulter le site Web suivant : http://kingsu.ab.ca/˜ glen/cshpm/home.htm

**CCEM :** Le Congrès canadien des étudiants en mathématiques 2000 aura lieu du 6 au 10 juin à l'Université McMaster. Pour de plus amples renseignements sur le programme et l'inscription, veuillez communiquer avec Gabriella Couto, cumc2000@cms.math.ca ou consulter le site Web au http://cumc.math.ca/cumc2000/

**Rassemblement des anciens de l'OIM :** Ce rassemblement spécial visant à souligner 20 années de participation à l'Olympiade internationale de mathématiques aura lieu de 11 h 30 à 15 h le dimanche 11 juin, à Toronto (Ontario). Pour de plus amples renseignements sur le programme, veuillez communiquer avec Richard Hoshino (IMO-reunion@cms.math.ca).

## Séances de travail

La SMC, la SCMAI et la SCHPM organiseront des réunions à l'occasion de MATH 2000. De plus amples renseignements seront fournis dans les prochaines annonces ou sur les sites Web de ces sociétés.

L'assemblée générale de la SCMAI aura lieu de 12 h 30 à 14 h le lundi 12 juin.

Le Comité exécutif de la SMC tiendra une réunion le jeudi 8 juin de 9 h à 15 h, dans la salle 1111 du Royal Connaught Howard Johnson Plaza.

Le lunch du Groupe de développement de la SMC aura lieu de 11 h à 13 h le vendredi 9 juin à la salle Dundurn du Royal Connaught Howard Johnson Plaza.

La réunion du Conseil d'administration de la SMC aura lieu de 13 h 30 à 18 h 30 le vendredi 9 juin à la salle Ontario du Royal Connaught Howard Johnson Plaza.

La SMC tiendra son assemblée générale annuelle de 12 h 30 à 14 h le lundi 12 juin.

La réunion d'affaires de la SCHPM aura lieu de 12 h à 14 h le lundi 12 juin.

## Expositions

Les kiosques d'exposition seront ouverts aux heures indiquées durant la Réunion.

## Envoi des résumés

La SMC publiera les **titres** des communications des conférenciers principaux, primés et invités, et des communications libres dans le numéro **d'avril** des *Notes et la SMC*. Une liste à jour sera publiée dans le numéro de **mai**. Tous les **résumés** paraîtront dans le programme de la Réunion et seront aussi accessibles à partir du site Web : *http://camel.math.ca/CMS/Events/math2000*.

**Tous les conférenciers sont priés d'envoyer le titre de leur conférence aux organisateurs avant le 4 janvier et de**

**faire parvenir leur résumé à la SMC selon les instructions fournies par les organisateurs.**

**Conférenciers principaux, primés et invités des symposiums** : Les résumés peuvent être transmis par courriel (instructions ci-dessous) ou par la poste, sur le formulaire que l'on peut se procurer sur le site Web ou par l'intermédiaire des organisateurs des séances. Faire parvenir les résumés à la Coordinatrice des résumés, MATH 2000, Bureau administratif de la SMC, 577, avenue King-Edward, bureau 109, Ottawa (Ontario) Canada K1N 6N5, **au plus tard le 1er février 2000**.

**Présentations des étudiants diplômés et Communications libres** : les résumés peuvent être transmis par courriel (instructions ci-dessous) ou par la poste, sur le formulaire que l'on peut se procurer dans le numéro de **février** des *Notes de la SMC* ou sur le site Web. Adresser le tout à la Coordinatrice des résumés, MATH 2000, Bureau administratif de la SMC, 577, avenue King-Edward, bureau 109, Ottawa (Ontario) Canada K1N 6N5, **au plus tard le 28 février 2000**.

**Envoi des résumés par courriel** : On peut transmettre les fichiers, incluant le nom du conférencier, son affiliation, son adresse complète ainsi que le titre et le résumé de sa communication, à : `resumes@smc.math.ca` (conférenciers invités), `ed-resumes@smc.math.ca` (présentations des étudiants diplômés), ou `cl-resumes@smc.math.ca` (communications libres).

*Prière de respecter les dates limites de remise des résumés ci-dessus.*

## Inscription

La Société mathématique du Canada est chargée des inscriptions à MATH 2000. Un formulaire d'inscription paraîtra dans le numéro de **février 2000** des *Notes de la SMC* et dans les publications des autres sociétés participantes. On peut également se le procurer auprès de la SMC :

MATH 2000 Inscription
Bureau administratif de la SMC
577, avenue King-Edward, bureau 109
C.P. 450, Succursale A
Ottawa (Ontario) CANADA K1N 6N5
Téléphone : 613-562-5702
Télécopieur : 613-565-1539
Courriel : reunions@smc.math.ca

**Vous pouvez aussi vous inscrire par courrier électronique** en consultant la page d'accueil :
http://camel.math.ca/CMS/Events/math2000
Les frais (en devises canadiennes) sont payables par chèques, VISA ou MasterCard. Les paiements en devises américaines seront acceptés, mais nous vous demandons de contacter votre institution financière pour prendre connaissance du taux de change en vigueur.

**Le paiement doit nous parvenir au plus tard le 15 mai pour que vous ayez droit aux tarifs réduits.**

| | Avant le 15 mai | Après le 15 mai |
|---|---|---|
| Conférenciers principaux ou primés | $ 0 | $ 0 |
| Conférenciers/organisateurs | 135 | 135 |
| Participants avec subvention | 270 | 350 |
| Participants sans subvention | 135 | 175 |
| Frais d'une journée | 135 | 175 |
| Postdocs, retraités, étudiants, sans-emploi | 50 | 50 |
| Banquet (gratuits pour principaux/primés) | 50 | 50 |
| Lunch (billets pour dimanche-mardi)-chacun | 10,50 | 10,50 |

## Politique de remboursement

Les participants qui désirent annuler leur inscription doivent en aviser le bureau administratif de la SMC **par écrit avant le 1er juin** pour se voir rembourser leurs frais d'inscription (moins 40 $). Les participants dont les communications libres n'auront pas été acceptées seront remboursés intégralement sur demande.

## Hébergement

Il est fortement recommandé aux participants de réserver à l'avance. Des chambres ont été retenues aux endroits ci-dessous jusqu'au **8 mai 2000**. Après cette date, les hôtels ne prendront vos réservations que s'il reste des chambres. Les tarifs sont indiqués en devises canadiennes.

Note : La plupart des hôtels se trouvent à une certaine distance de l'université, mais la plupart sont accessibles par transport en commun. L'hôtel le plus proche est le Visitors Inn, situé à environ 1 km de l'université. Les résidences McMaster sont situées à proximité d'une zone boisée entourant Cootes Paradise, à l'extrémité ouest du lac Ontario.

Réserver au plus tard le **8 mai 2000**

**Ramada Plaza Hotel**
150 King Street East, Hamilton, ON L8N 1B2
Arrivée : 15:00; départ : 12:00
Taxes applicables: TPS (7%), taxe d'hébergement (5%)
Téléphone: 905-528-3451 FAX: 905-525-8638
Tarifs: 99$, 1 ou 2 personnes
10$ supplémentaire par personne additionnelle
(petit déjeuner continental inclus)

**Royal Connaught Howard Johnson Plaza**
112 King Street East, Hamilton, ON L8N 1A8
Arrivée : 15:00; départ : 12:00
Taxes applicables: TPS (7%), taxe d'hébergement (5%)
Téléphone: 905-546-8111 FAX: 905-546-8118
Tarifs: 85$, 1,2,3 ou 4 personnes
10$ par jour pour un lit d'appoint

**Holiday Inn Burlington**
3063 South Service Service Rd., Burlington, ON L7N 3E9
Arrivée : 15:00; départ : 12:00
Taxes applicables: TPS (7%), taxe d'hébergement (5%)
Téléphone: 905-639-4443 FAX: 905-333-4033
Tarifs: 109$, 1 ou 2 personnes

Note : Le Holiday Inn Burlington n'est pas facilement accessible par transport en commun. Il serait préférable d'avoir une voiture.

**Visitors Inn**
649 Main Street West, Hamilton, ON L8S 1A2
Arrivée : 14:00; départ : 11:00
Taxes applicables: TPS (7%), taxe d'hébergement (5%)
Téléphone: 905-529-6979 FAX: 905-529-6979
Tarifs: 79$, 1 personne 84$, 2 personnes

**Résidences McMaster**
Housing & Conference Services, Commons Building 129B
McMaster University, 1280 Main Street West
Hamilton, ON L8S 4K1
Arrivée : de 7:00 à 23:00 ; départ : 12:00
Taxes applicables: TPS (7%), taxe d'hébergement (5%)
Téléphone: 905-525-9140, poste 24781 FAX: 905-529-3319
Courriel: confs@mcmaster.ca
Tarifs: 39,75$ par personne, chambre individuelle
32.75$ par personne, chambre pour 2 personnes
petit déjeuner, serviettes, draps, stationnement inclus

Pour réserver à la résidence McMaster, faites parvenir le formulaire de réservation avec le paiement du séjour en entier. Seules les demandes accompagnées du paiement intégral seront confirmées. Veuillez ajouter 12% de taxes aux tarifs ci-dessus.

Vous êtes priés de faire vos propres réservations. Les tarifs préférentiels s'appliquent aussi aux deux jours qui précèdent et qui suivent la Réunion. Veuillez mentionner que vous participez à MATH 2000.

**Annulation de réservations :** Les chambres d'hôtel seront retenues jusqu'à 18 h sauf si vous donnez un dépôt pour la première nuit ou un numéro de carte de crédit en garantie. Les annulations sont permises jusqu'à 18 h le jour prévu de votre arrivée.

Pour annuler une réservation aux résidences McMaster, il faut en faire la demande par écrit. Les Housing & Conference Services devront avoir reçu votre avis au moins 72 heures avant la date prévue de votre arrivée pour que vous ayez droit à un remboursement, moins 10 $ de frais d'administration.

## Services de garde

Les renseignements sur les services de garde seront publiés sur notre site Web au fur et à mesure qu'ils nous parviendront.

## Déplacements

**Ville de Hamilton:** Pour obtenir des renseignements détaillés sur la ville de Hamilton (information touristique, températures et climat locaux, cartes du lieu de la Réunion et de la ville, etc.), rendez-vous au site Web suivant : http://www.city.hamilton.on.ca/

**Avion:** Trois aéroports à distance raisonnable accueillent des vols sans escale de toutes les grandes villes canadiennes et américaines, et des principales villes du Mexique. L'aéroport international de Hamilton est situé à environ 8 km au sud-ouest de la ville de Hamilton, dans le comté de Glanbrook, à 15 minutes du centre-ville (60 minutes du centre-ville de Toronto). L'aéroport international Lester B. Pearson se trouve à 68 km à l'est de Hamilton-Wentworth, soit à environ 45 minutes de route du centre-ville de Hamilton. Quant à l'aéroport international de Buffalo, il est à environ 110 km ou à une heure et demie de route de Hamilton.

**Service de navette de l'aéroport L. B. Pearson :** La société Airways Transit offre un service de navette qui relie l'aéroport international L. B. Pearson de Toronto à Hamilton. Ceux et celles qui réserveront à l'avance auront droit à un tarif spécial de 29 $ CAN (aller simple, TPS incluse). Veuillez payer le chauffeur.

Pour réservations :
Téléphone - 905-689-4460
Courriel - infohamilton@airwaystransit.com
Web - http://www.airwaystransit.com/reservations.html

Pour les réservations téléphoniques ou par courriel, veuillez avoir les renseignements suivants sous la main : nom, adresse de courriel, numéro de téléphone, nom du congrès (MATH 2000), détails concernant votre arrivée à l'aéroport Pearson et votre départ, y compris les numéros de vol de même que les dates et heures d'arrivée et de départ, ainsi que l'adresse où vous vous rendrez.

Les participants DOIVENT mentionner qu'ils prendront part à MATH 2000 au moment de la réservation s'ils souhaitent bénéficier du tarif réduit.

**Train :** De Toronto, on peut prendre un train de VIA ou un «GO train» pour se rendre à Aldershot. Le trajet dure environ 40 minutes. Un service d'autobus municipal permet ensuite de se rendre de Aldershot à l'Université McMaster. Le trajet en taxi jusqu'au centre-ville de Hamilton prendra à peu près 15 minutes et coûtera environ 16 $, aller simple.

**Stationnement aux hôtels et à l'Université McMaster :** Les renseignements sur le stationnement aux hôtels et à l'Université McMaster seront publiés sur notre site Web au fur et à mesure qu'ils nous parviendront.

## Remerciements

Nous remercions les organismes suivant de leur soutien financier :
- Centre de recherches mathématiques
- Fields Institute for Research in Mathematical Sciences
- Pacific Institute for the Mathematical Sciences
- Université McMaster
- Université de Waterloo.

Les sociétés participant à MATH 2000 tiennent à remercier les membres du Comité de coordination et les nombreux organisateurs de séances pour l'organisation de cette Réunion et des activités scientifiques, sociales et celles du volet éducation.

## Comité de coordination

**Programme**
*Président et coordinateur :* Ian Hambleton (McMaster)
Sue Ann Campbell (Waterloo), Niky Kamran (McGill),

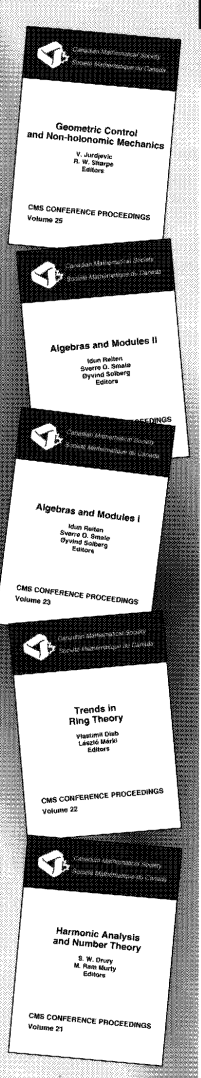
Richard Kane (Western), William Langford (Guelph), Anna Lawniczak (Guelph), Siv. Sivaloganathan (Waterloo), Edward Vrscay (Waterloo), Graham Wright (SMC, d'office).

**Logistique**

*Président du comité de logistique local :* Carl Riehm (McMaster)

N. Balakrishnan (McMaster), Monique Bouchard (SMC, d'office), Bradd Hart (McMaster), Pamela Penny (McMaster), Gail Wolkowicz (McMaster).


AMERICAN MATHEMATICAL SOCIETY




## Conference Proceedings, Canadian Mathematical Society

This series is published for the Canadian Mathematical Society by the AMS. It consists of the proceedings of internationally attended conferences on pure and applied mathematics sponsored by the CMS. **CMS members may order at the AMS member prices.** (ISSN 0731-1036) Softcover.

### Geometric Control and Non-holonomic Mechanics

**V. Jurdjevic** and **R. W. Sharpe**, *University of Toronto, ON, Canada*, Editors

Control theory, a synthesis of geometric theory of differential equations enriched with variational principles and the associated symplectic geometry, emerges as a new mathematical subject of interest to engineers, mathematicians, and physicists. This collection focuses on several distinctive research directions having origins in mechanics and differential geometry, but driven by modern control theory.

The first of these directions deals with the singularities of small balls for problems of sub-Riemannian geomtery and provides a generic classification of singularities for two-dimensional distributions of contact type in a three-dimensional ambient space.

The second direction deals with invariant optimal problems on Lie groups exemplified through the problem of Dublins extended to symmetric spaces, the elastic problem of Kirchhoff and its relation to the heavy top. The results described in the book are explicit and demonstrate convincingly the power of geometric formalism.

The remaining directions deal with the geometric nature of feedback analyzed through the language of fiber bundles, and the connections of geometric control to non-holonomic problems in mechanics, as exemplified through the motions of a sphere on surfaces of revolution.

This book provides quick access to new research directions and also demonstrates the effectiveness of new insights and methods that control theory brings to mechanics and geometry.

**Conference Proceedings, Canadian Mathematical Society**, Volume 25; 1998; 239 pages; Softcover; ISBN 0-8218-0795-1; List $49; Individual member $29; Order code CMSAMS/25CMS99

### Algebras and Modules II

**Idun Reiten**, **Sverre O. Smalø**, and **Øyvind Solberg**, *Norwegian University of Science and Technology, Trondheim*, Editors

This volume contains 43 research papers based on results presented at the Eighth International Conference on Representations of Algebras (ICRA VIII) held in Geiranger, Norway. The papers, written by experts in the field, cover the most recent developments in the representation theory of artin algebras and related topics.

**Features:**

- a unique source for the developments in the representation theory of finite dimensional and artin algebras and related topics
- a wide variety of important papers by leading researchers in the field, with references to earlier developments in the field

Volume 24; 1998; 569 pages; Softcover; ISBN 0-8218-1076-6; List $99; Individual member $59; Order code CMSAMS/24CMS99

### Algebras and Modules I

**Idun Reiten**, **Sverre O. Smalø**, and **Øyvind Solberg**, *Norwegian University of Science and Technology, Trondheim*, Editors

This volume contains recent results on geometric aspects of representations of algebras, a thorough treatment of the theory of quasitilted algebras, new developments on infinite dimensional representations of finite dimensional algebras, a bridge between representation of algebraic groups and representation theory of finite dimensional algebras, and recent discoveries on modular representation theory. In addition, the volume contains two papers devoted to some of Maurice Auslander's many contributions both in the representation theory of finite dimensional algebras and in commutative ring theory.

A general background in noncommutative algebra including rings, modules and homological algebra is required. Given that, parts of this volume would be suitable as a textbook for an advanced graduate course in algebra.

Volume 23; 1998; 198 pages; Softcover; ISBN 0-8218-0850-8; List $39; Individual member $23; Order code CMSAMS/23CMS99

### Trends in Ring Theory

**Vlastimil Dlab**, *Carleton University, Ottawa, ON*, and **László Márki**, *Hungarian Academy of Sciences, Budapest*, Editors

The Ring Theory Conference (University of Miskolc, Hungary) successfully accomplished its two goals: 1) to reflect contemporary trends in the subject area and 2) to offer a meeting place for a large number of Eastern European algebraists and their colleagues from around the world. Particular emphasis was placed on recent developments in the following four areas: representation theory, group algebras, PI algebras, and general ring theory. This book presents 13 of the invited lectures.

Volume 22; 1998; 239 pages; Softcover; ISBN 0-8218-0849-4; List $49; Individual member $29; Order code CMSAMS/22CMS99

### Harmonic Analysis and Number Theory
#### Papers in Honour of Carl S. Herz

**S. W. Drury**, *McGill University, Montreal, PQ*, and **M. Ram Murty**, *Queen's University, Kingston, ON*, Editors

This volume presents the proceedings of a conference held at McGill University (Montreal). The papers are dedicated to the memory of Carl Herz, who had deep interests in both harmonic analysis and number theory. These two disciplines have a symbiotic relationship that is reflected in the papers in this book.

Volume 21; 1997; 227 pages; Softcover; ISBN 0-8218-0794-3; List $49; Individual member $29; Order code CMSAMS/21CMS99

All prices subject to change. Charges for delivery are $3.00 per order. For optional air delivery outside of the continental U. S., please include $6.50 per item. *Prepayment required.* Order from: **American Mathematical Society**, P. O. Box 5904, Boston, MA 02206-5904, USA. For credit card orders, fax 1-401-455-4046 or call toll free 1-800-321-4AMS (4267) in the U. S. and Canada, 1-401-455-4000 worldwide. Or place your order through the AMS bookstore at www.ams.org/bookstore/. Residents of Canada, please include 7% GST.

AMS
AMERICAN MATHEMATICAL SOCIETY

# MATH 2000

**Hamilton (Ontario)**

**Schedule - Horaire**

**The most up-to-date information, including scheduling, is available at the following world wide web address:**
**Vous trouverez l'information la plus récente, y compris les horaires, à l'adresse Web suivante:**
**http://www.camel.math.ca/CMS/Events/math2000/**

*Unless otherwise indicated, events are to be held in Hamilton, Ontario*
*A moins d'avis contraire, tous les événements auront lieu à Hamilton (Ontario).*

| Tuesday / mardi<br>June 6 juin | Wednesday / mercredi<br>June 7 juin | Thursday / jeudi<br>June 8 juin | Friday / vendredi<br>June 9 juin |
|---|---|---|---|
| CUMC arrival / arrivé<br><br>MITACS - Toronto<br>JOB FAIR/CARREFOUR EMPLOI - Toronto | CUMC<br>FIELDS - Toronto<br><br>MITACS - Toronto<br>JOB FAIR/CARREFOUR EMPLOI - Toronto | CUMC<br>FIELDS - Toronto<br>CMS Business Meetings/<br>SMC Réunions d'affaires | CUMC<br>FIELDS - Toronto<br>CMS Business Meetings/<br>SMC Réunions d'affaires |
| | AM CUMC sessions | AM CUMC sessions | AM CUMC sessions |
| | | 9-3pm CMS Executive Committee Meeting / Réunion du Comité exécutif de la SMC | 11-1pm CMS Development Group Meeting / Réunion du Groupe de développement de la SMC |
| | PM CUMC sessions | PM CUMC delegates travel to Toronto to attend Fields / délégués du CUMC à Toronto pour Symposium Fields | PM CUMC sessions<br>1:30-6:30 CMS Board of Directors / Réunion du Conseil d'administration de la SMC |
| 7:00 CUMC Reception | | | 7-9 MATH 2000 Reception Registration/ inscription |

The programme for June 10 -13 is detailed on next page. / Pour le programme du 10-13 juin, svp voire la page suivante.

# MATH 2000

**Hamilton (Ontario)**

**Schedule - Horaire**

**The most up-to-date information, including scheduling, is available at the following world wide web address:**
**Vous trouverez l'information la plus récente, y compris les horaires, à l'adresse Web suivante:**
**http://www.camel.math.ca/CMS/Events/math2000/**

*Unless otherwise indicated, events are to be held in Hamilton, Ontario*
*A moins d'avis contraire, tous les événements auront lieu à Hamilton (Ontario).*

| Saturday / samedi<br>June 10 juin | Sunday / dimanche<br>June 11 juin | Monday / lundi<br>June 12 juin | Tuesday / mardi<br>June 13 juin |
|---|---|---|---|
| CUMC<br>CSHPM<br>SESSIONS | CSHPM<br>SESSIONS<br>EXHIBITS/EXPOSITIONS | CSHPM<br>SESSIONS<br>EXHIBITS/EXPOSITIONS | SESSIONS |
| AM CUMC sessions<br>8:30 Opening/ouverture<br>9 CARL POMERANCE<br>10 Coffee / café<br>10:15 EUGENE MYERS<br>11:15 Sessions<br>12:15-2pm Delegates' Luncheon Lunch des participants<br>2-3 PIERRE LOUIS LIONS<br>3-4 DAVID MUMFORD<br>4-6 Sessions<br>6-7:30 Graduate Poster Session and Reception / Présentations des étudiants diplômés<br>7:30 CAIMS Council<br>7:30 CUMC closing banquet banquet de départ | 8-10 Sessions<br>10 Coffee / café<br>10:15 Plenary<br>11:15 RAYMOND PIERREHUMBERT<br>11:30-3pm IMO<br>Lunch / déjeuner-Toronto<br>12:15-2pm Dept Chairs'Lunch Lunch des chefs de départements<br>12:15-2pm Lunch / déjeuner<br>2-3 SHING-TUNG YAU<br>3-4 IOANNIS KARATZAS<br>4-6 Sessions<br>6-7 Reception<br>7-8 Public Lecture / Conférence publique JAMES STEWART | 8-10 Sessions<br>10 Coffee / café<br>10:15 LAWRENCE SHAMPINE<br>11:15 DUSA McDUFF<br>12:00-2pm CSHPM/SCHPM business meeting<br>12:30 -2pm CAIMS GM CMS AGM<br>12:15-2pm Lunch / déjeuner<br>2-3 EFIM I. ZELMANOV<br>3-4 L. VAN DEN DRIES<br>4-6 Sessions<br>6:30 Reception<br>7:30 Banquet | 8-9 Sessions<br>9-10 Lecture / conférence Krieger-Nelson C. KANTA GUPTA<br>10 Coffee / café<br>10:15 FRANCIS CLARKE<br>11:15 MAURICE QUEYRANNE<br>12:15-2pm Lunch / déjeuner<br>2-3 CAIMS / SCMAI Doctoral Prize Prix de doctorat<br>3-5 Sessions |

The programme for June 6-9 is detailed on previous page. / Pour le programme du 6-9 juin, svp voire la page précédente.

# ABSTRACT FORM
# MATH 2000 - Hamilton, Ontario

**Abstracts for Invited Speakers** will be published in the meeting programme. Please complete and return this form to be received no later than **February 1, 2000**.
**Abstracts for Graduate Student Poster Session** will be published in the meeting programme. Those submitting abstracts are asked to complete and return this form to be received no later than **February 28, 2000**.
**Abstracts for Contributed Papers** will be published in the meeting programme. Those submitting contributed papers are asked to complete and return this form to be received no later than **February 28, 2000**.

All abstracts will also be available on the Canadian Mathematical Electronic Services (Camel) at
**http://camel.math.ca/CMS/Events/math2000/**

**Mailing address:**

MATH 2000, Abstract Coordinator, CMS Executive Office,
577 King Edward, Suite 109, Ottawa, Ontario CANADA K1N 6N5

**Electronic mail:**

| Please check one | | Deadline | Email address |
|---|---|---|---|
| □ | **Prize/plenary/invited speaker** | February 1 | **abstracts@cms.math.ca** |
| □ | **Graduate Student Poster Session** | February 28 | **gs-abstracts@cms.math.ca** |
| □ | **Contributed Papers** | February 28 | **cp-abstracts@cms.math.ca** |

**Abstract forms for the graduate student poster session and contributed papers must be accompanied by a registration form and the payment of the appropriate fees.**

Your abstract may be submitted electronically using TEX. Otherwise, please type your abstract in the box below using the equivalent of a 12 point font size. The heading containing the author's name, postal and e-mail addresses, and title of the talk is indented one half inch.

For convenience, the following information is provided in a sample format:

LASTNAME, FIRSTNAME, University name and postal address, email address

*The title of the talk would go here*

The author's name should be capitalized and the title of the paper should be in italics. Your cooperation in submitting your abstract according to the guidelines specified is essential to the organizers of the meeting.

Please type abstract below this line.

SESSION (please provide !!):

# FORMULAIRE POUR LES RÉSUMÉS
# MATH 2000 - Hamilton (Ontario)

**Les résumés des conférenciers invités** seront publiés dans le programme de la réunion. Veuillez complèter et retourner ce formulaire pour qu'il parvienne à l'adresse ci-dessous avant le **1 février 2000**.
**Les résumés de présentations des étudiants diplômés** seront également publiés dans le Programme de la Réunion. Veuillez complèter et retourner ce formulaire pour qu'il parvienne à l'adresse ci-dessous avant le **28 février 2000**.
**Les résumés de communications** seront également publiés dans le Programme de la Réunion. Veuillez complèter et retourner ce formulaire pour qu'il parvienne à l'adresse ci-dessous avant le **28 février 2000**.

Tous les résumés seront disponibles sur le site web
**http://camel.math.ca/CMS/Events/math2000/**.

**Adresse :**

MATH 2000, Coordinatrice des résumés, Bureau administratif
577 King Edward, Salle 109, Ottawa (Ontario) CANADA K1N 6N5

**Adresse électronique :**

| Cocher une case | | Date limite | Adresse électronique |
|---|---|---|---|
| □ | **Conférenciers invités** | 1 février | **resumes@smc.math.ca** |
| □ | **Présentations des étudiants diplômés** | 28 février | **ed-resumes@smc.math.ca** |
| □ | **Communications** | 28 février | **cl-resumes@smc.math.ca** |

**Les formulaires pour résumés pour les présentations des étudiants diplômés et les communications doivent etre accompagnés d'un formulaire d'inscription et du règlement des frais d'inscription qui s'appliquent.**

Vous pouvez envoyer votre résumé par courrier électronique en format TEX. Si cela n'est pas possible, veuillez dactylographier le résumé dans l'espace ci-dessous en utilisant l'équivalent d'un caractère de 12 points. L'en-tête contenant le nom de l'auteur, ses adresses postale et électronique et le titre de la conférence sont tapés en retrait d'un demi-pouce.

NOM DE L'AUTEUR, Nom de l'université, adresse de l'université, adresse électronique

*Titre de la conférence*

Le nom de l'auteur devrait apparaître en lettres majuscules et le titre de la conférence devrait apparaître en lettres italiques. Il est crucial pour les organisateurs que vous vous conformiez aux instructions fournies lors de la soumission des résumés.

Veuillez utiliser l'espace ci-dessous pour taper votre résumé.

SESSION (veuillez indiquer svp !!):

## REGISTRATION FORM - MATH 2000

**June 10-13, 2000 - McMaster University, Hamilton, Ontario**

**Send completed form with payment to:**
MATH 2000, CMS Executive Office, 577 King Edward, POB 450, Station A, Ottawa, Ontario, CANADA K1N 6N5
Phone: 613-562-5702, FAX 613-565-1539 (Please use the FAX # for credit card payments only.)

| **Deadlines:** | | |
|---|---|---|
| | Speakers, please send title of talk to organizers | by January 4 |
| | Abstracts for plenary, prize, session speakers | by February 1 |
| | Abstracts for grad student poster session and contributed papers (with reg form) | by February 28 |
| | Hotel Reservations | by May 8 |
| | Preregistration for reduced rates | payment by May 15 |
| | Cancellation (refund less $40 penalty) | by June 1 |

| | | |
|---|---|---|
| Name: | | CMS ID # 00 |
| Institution (for badge): | | |
| Mailing Address: | | Voluntary Information:<br>☐ Male<br>☐ Female |
| Telephone: | Email: | |
| Arrival date: | Departure date: | |

PLEASE MAKE YOUR HOTEL RESERVATIONS DIRECTLY WITH THE HOTEL. Where will you be staying?
☐ Ramada Plaza Hotel ☐ Howard Johnson ☐ Holiday Inn ☐ Visitors Inn ☐ McMaster Residence ☐ N/A

Special diets: ☐ Kosher ☐ Vegetarian ☐ Diabetic ☐ Low fat ☐ Milk allergy ☐ Nut allergy ☐ Other:

I am : ☐ a Plenary Speaker ☐ a Prize Recipient ☐ a Session Speaker ☐ an Organizer ☐ a delegate

☐ I would like to deliver a contributed paper.

My abstract: ☐ is enclosed ☐ will follow ☐ sent by e-mail
For contributed papers, please remember that we cannot consider the abstract until registration fees are received.

Memberships: ☐ CMS ☐ CAIMS ☐ CORS ☐ CSHPM ☐ SSC ☐ AMS ☐ MAA ☐ SIAM ☐ AWM ☐ GAMM

(check all that apply) ☐ University professor ☐ Elementary teacher ☐ High school teacher ☐ College teacher ☐ CEGEP teacher ☐ Student ☐ Postdoctoral fellow ☐ Retired ☐ Unemployed

PLEASE INDICATE WHICH SPECIAL OR RELATED EVENT(S) YOU MIGHT BE ATTENDING
☐ MITACS ☐ Fields Symposium ☐ CSHPM ☐ CUMC ☐ Job Fair ☐ IMO Alumni Lunch
These events (except CSHPM) require separate registration. Please contact the event's organizers for details.

PLEASE INDICATE WHICH SESSION(S) YOU MIGHT BE ATTENDING

| | | | |
|---|---|---|---|
| ☐ PDE | ☐ Symplectic Geometry | ☐ Group Theory | ☐ Cryptography/Number Th. |
| ☐ Algebraic Groups | ☐ Control Theory | ☐ Math Biology | ☐ Geo. Fluid Dynamics |
| ☐ Financial Math | ☐ History of Math | ☐ Education | ☐ Industrial Statistics |
| ☐ Operations Research | ☐ Logic | ☐ Imaging/Vision | ☐ Topology of Manifolds |
| ☐ Biofluid dynamics/med science | ☐ Grad Student Posters | ☐ Math on the Internet | ☐ Contributed Papers |
| | | | ☐ Public Lecture |

Don't forget to purchase your ticket for the banquet !!
All categories grant access to MATH 2000 and CSHPM sessions and the Job Fair.
All categories also include a ticket to the Delegates' Luncheon.

| Please circle one of the registration categories in the chart below | Before May 15 | After May 15 |
|---|---|---|
| Plenary Speaker / Prize Lecturer | $ 0 | $ 0 |
| Session Speakers/Organizers (choose this or other category, whichever is less) | 135 | 135 |
| Delegates with grants | 270 | 350 |
| Delegates without grants | 135 | 175 |
| One-day fee | 135 | 175 |
| Postdocs, retired, students, unemployed | 50 | 50 |
| Banquet, Monday, June 12 (free for plenary/prize speakers) | 50 | 50 |
| Lunch ☐ Sunday ☐ Monday ☐ Tuesday (price per day-must be prepaid) | 10.50 | 10.50 |

| Registration: $ | Lunch = $ | Banquet = $ | TOTAL $ |
|---|---|---|---|

Payment method: ☐ Cheque (payable to CMS) ☐ VISA ☐ Master Card ☐ Purchase Order (attached)

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| If this is your credit card, please print your name as it appears on the card and sign your name. If this is not your card, please print holder's name as it appears on the credit card and have the card holder sign. | |
| Print: | Signature: |

**FORMULAIRE D'INSCRIPTION - MATH 2000**
**10-13 juin 2000 - Université McMaster, Hamilton (Ontario)**

**Veuillez envoyer ce formulaire et votre paiement à :**
MATH 2000, Bureau de la SMC, 577 King Edward, CP 450, Succursale A, Ottawa, Ontario, CANADA K1N 6N5
Téléphone: (613) 562-5702, Télécopieur: (613) 565-1539 (FAX pour paiements par carte de crédit seulement.)

| **Dates importantes:** | | |
|---|---|---|
| | s.v.p. envoyer le titre de votre conférence à l'organisateur | avant le 4 janvier |
| | Résumé - conférenciers invités | 1er février |
| | Résumé - étudiants diplômés et communications libres (avec insc.) | 28 février |
| | Réservations d'hôtel | 8 mai |
| | Préinscription à prix réduit | paiement avant le 15 mai |
| | Annulation - Préinscription (remboursement moins 40$) | 1er juin |

| | |
|---|---|
| Nom: | No. SMC 00 |
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| Adresse postale: | Information optionnelle:<br>☐ Homme<br>☐ Femme |
| Téléphone: | Courier él: |
| Date d'arrivée: | Date de départ: |

VOUS ÊTES PRIÉS DE FAIRE VOS PROPRES RÉSERVATIONS D'HÔTEL. Veuillez indiquer votre choix d'hôtel
☐ Ramada Plaza Hotel ☐ Howard Johnson ☐ Holiday Inn ☐ Visitors Inn ☐ McMaster Residence ☐ s/o

☐ Kosher ☐ Végétarien ☐ Diabétique ☐ Pauvre en mat grasses ☐ Allergie-lait ☐ Allergie-noix ☐ Autre:

Je suis un: ☐ organisateur ☐ conférencier primé ☐ conf. principal ☐ conf. de séance ☐ participant

☐ J'aimerais présenter une communication.

Mon résumé ☐ est inclus ☐ suivra ☐ suivra par courriel Nous demandons à toute personne désirant présenter une communication de joindre au résumé son formulaire et le règlement de ses frais d'inscription.

Adhésions: ☐ SMC ☐ SCMIA ☐ SCRO ☐ SCHPM ☐ SSC ☐ AMS ☐ MAA ☐ SIAM ☐ AWM ☐ GAMM

Cocher ☐ Professeur d'université ☐ Enseignant - élém. ☐ Enseignant - secondaire ☐ Enseignant - Collège
s.v.p. ☐ Enseignant - CÉGEP ☐ Étudiant(e) ☐ Postdoc ☐ À la retraite ☐ Sans-emploi

VEUILLEZ INDIQUER À QUEL(S) ÉVÉNEMENT(S) VOUS PARTICIPEREZ
☐ MITACS ☐ Symposium Fields ☐ SCHPM ☐ CCEM ☐ Carrefour emploi ☐ Lunch OIM
Ces événements (à l'exception de la SCHPM) demandent une inscription séparée.
Veuillez communiquer avec les organisateurs à propos des détails d'inscription.

VEUILLEZ INDIQUER À QUELLE(S) SÉANCE(S) VOUS PARTICIPEREZ ☐ Conférence publique

| | | | |
|---|---|---|---|
| ☐ Équations dérivées partielles | ☐ Géom symplectique | ☐ Théorie des groupes | ☐ Cryptographie/Th des nombres |
| ☐ Groupes algébriques | ☐ Th. de contrôle | ☐ Biologie math | ☐ Dyn des fluides en géophysique |
| ☐ Maths financières | ☐ Histoire des maths | ☐ Enseignement | ☐ Stat industrielle |
| ☐ Recherche opérationnelle | ☐ Logique | ☐ Vision/images | ☐ Topologie des variétés |
| ☐ Dyn des biofluides/sc médicales | ☐ Prés des étudiants | ☐ Math sur l'Internet | ☐ Communications |

N'oubliez pas d'acheter votre billet pour le banquet !!
Toutes les catégories donnent accès aux séances de MATH 2000, de la SCHPM et au Carrefour emploi.
Un billet pour le lunch des délégués est inclus dans toutes les catégories d'inscription.

| Veuillez encercler la catégorie d'inscription choisie | Avant le 15 mai | Après le 15 mai |
|---|---|---|
| Conférenciers principaux / conférenciers primés | 0 $ | 0 $ |
| Conférenciers/organisateurs(choisissez cette catégorie ou une autre:montant moins élevé) | 135 | 135 |
| Participants avec subvention | 270 | 350 |
| Participants sans subvention | 135 | 175 |
| Frais d'une journée | 135 | 175 |
| Postdocs, retraités, étudiants, sans-emploi | 50 | 50 |
| Banquet, lundi 12 juin (gratuit pour les conférenciers principaux / primés) | 50 | 50 |
| Lunch ☐ dimanche ☐ lundi ☐ mardi (10,50$ chacun-paiement en avance requis) | 10,50 | 10,50 |

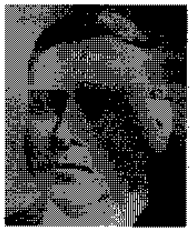
| Inscription: $ | Lunch = $ | Banquet = $ | TOTAL $ |
|---|---|---|---|

Mode de paiement: ☐ Chèque (au nom de la SMC) ☐ VISA ☐ Master Card ☐ Bon de commande

| Carte de crédit #: | Date d'expiration: |
|---|---|
| Veuillez inscrire votre nom (tel qu'il apparaît sur votre carte) en lettres moulées et signer.<br>Si vous utilisez une autre carte, veuillez inscrire le nom et faire signer le détenteur) | |
| Lettres moulées: | Signature: |

# WORLD MATHEMATICAL YEAR 2000 SYMPOSIUM

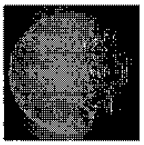
## The Legacy of John Charles Fields



**Wednesday, June 7 to Friday, June 9, 2000**

**to be held at The Royal Ontario Museum**
**100 Queen's Park, Toronto, Canada**

The following Fields Medallists have agreed to participate in a celebration of the history of the Fields Medal, in connection with World Mathematical Year (as designated by UNESCO and IMU):



Sir Michael Atiyah *(Edinburgh)*
Alan Baker *(Cambridge)*
Richard Borcherds *(Berkeley)*
Alain Connes *(Collège de France, IHES)*
Timothy Gowers *(Cambridge)*
Vaughan Jones *(Berkeley)*
Maxim Kontsevich *(IHES)*
Pierre-Louis Lions *(Paris IX)**
John Milnor *(Stony Brook)*
David Mumford *(Brown)**
Stephen Smale *(City University of Hong Kong)*
Efim Zelmanov *(Yale)**

Historical lectures will be presented by the following two speakers:

Tom Archibald *(Acadia)*
Michael Monastyrsky *(Institute for Theoretical & Experimental Physics, Moscow)*

* The lectures by these three Fields Medallists will be given at the Math 2000 meeting in Hamilton.

**Scientific Program Committee:**

James Arthur (Toronto), John Chadam (Pittsburgh), Donald Dawson (Fields Institute), George Elliott (Chairman; Toronto, Copenhagen and the Fields Institute), Peter Fillmore (Dalhousie), Nassif Ghoussoub (British Columbia and PIMS), Bernard Hodgson (Laval), Jacques Hurtubise (CRM and McGill), Jerrold Marsden (Caltech), Cathleen Morawetz (Courant Institute), Carl Riehm (McMaster), and Luc Vinet (McGill)

**Registration:**

Registration Fee: $150.00 (Cdn)
The registration fee is waived for individuals registered for either the MITACS AGM or Math 2000 and for all students. On-line registration will be available in January 2000. Since seating capacity is limited, early registration is recommended.

**Sponsors:**

**www.fields.utoronto.ca/jcfields-legacy.html**

**jcfields@fields.utoronto.ca**

# CALL FOR NOMINATIONS / APPEL DE CANDIDATURES

## Editors-in-Chief - Canadian Journal of Mathematics
## Rédacteurs-en-chef - Journal canadien de mathématiques

The term of office of the present Editors-in-Chief of the Canadian Journal of Mathematics will end June 30, 2001. The Publications Committee of the CMS now invites nominations for the next Editors-in-Chief to serve a five year term.

Applications should consist of a formal letter of application and include the following:

- A curriculum vitae
- An expression of views of the publication indicating if any changes in direction or policy are contemplated
- Since editorial responsibilities often necessitate a lessening of responsabilities in an individual's normal work, applicants should indicate that they have the support of their university department and, in particular, of their head of department.

The Publications Committee will communicate its recommendation to the Executive Committee of the CMS in October 2000. Any input from the mathematical community concerning this important selection process is welcome.

Applications (with supporting material) and/or comments should be sent to the address below. The deadline for the receipt of applications is **April 15, 2000**.

*******

Le mandat des rédacteurs-en-chef actuels du Journal canadien de mathématique prendra fin le 30 juin 2001. Le Comité des publications de la SMC sollicite des mises en candidatures pour les prochains rédacteurs-en-chef pour un mandat de cinq ans.

Les mises en candidature doivent inclure une lettre formelle et les éléments suivants:

- Un curriculum vitae
- L'expression de votre opinion sur la publication indiquant si des changements de directions ou de politiques sont envisagés
- Puisque les responsabilités de rédaction nécessitent souvent une réduction dans la charge normale de travail, les candidats devraient indiquer qu'ils(elles) ont l'appui de leur département et en particulier, de leur chef de départment.

Le Comité des publications transmettra ses recommandations au Comité exécutif de la SMC en octobre 2000. Les commentaires de la communauté mathématique au sujet de cette importante sélection sont bienvenus.

Les mises en candiatures (avec matérial à l'appui) et/ou commentaires devraient être acheminés à l'adresse ci-dessous. L'échéance pour la réception des mises en candidature est le **15 avril 2000.**

## Associate Editors - CJM and CMB / Rédacteurs associés - JCM et BCM

The Publications Committee of the CMS solicits nominations for two Associate Editors for the Canadian Journal of Mathematics (CJM) and the Canadian Mathematical Bulletin (CMB). The appointment will be for five years beginning January 1, 2001. The continuing members (with their end of term) are below.

Le comité des publications de la SMC sollicite des mises en candidatures pour deux postes de rédacteur associé du Journal canadien de mathématiques (JCM) et Bulletin canadien de mathématiques (BCM). Le mandat sera de cinq ans et débutera le 1 janvier 2001. Les membres qui continuent suivent.

**CJM Editors-in-Chief / Rédacteurs-en-chef du JCM :**
J. Carrell et N. Ghoussoub (UBC) (2001)
**Rédacteurs-en-chef du BCM/ CMB Editors-in-Chief:**
A.J. Nicas et M. Min-oo (McMaster) (2000)
**Associate Editors / Rédacteurs associés :**
M. Barlow (UBC)(2004); J. Bland (Toronto) (2002); P. Borwein (SFU) (2004); J. Friedlander (Toronto) (2001); M. Goresky (Northeastern) (2001); N. Higson (Penn. State) (2000); J.F. Jardine (Western) (2000); F. Lalonde (UQAM) (2003); J. Lipman (Purdue) (2001); J. Millson (Maryland) (2003); N. Pippenger (UBC) (2004); and / et C. Sulem (Toronto) (2003).

The deadline for the submission of nominations is **April 15, 2000**. Nominations, containing a curriculum vitae and the candidate's agreement to serve should be sent to the address below.

L'échéance pour proposer des candidats est **le 15 avril 2000**. Les mises en candidature, accompagnés d'un curriculum vitae ainsi que du consentement du candidat(e), devrait être envoyées à l'adresse ci-dessous.

**James A. Mingo**
**Chair–CMS Publications Committee / Président–Comité des publications**
**Department of Mathematics and Statistics**
**Queen's University**
**Kingston, Ontario K7L 3N6**

## 2000 Adrien Pouliot Award /Prix Adrien-Pouliot 2000

Nominations of individuals or teams of individuals who have made significant and sustained contributions to mathematics education in Canada are solicited. Such contributions are to be interpreted in the broadest possible sense and might include: community outreach programmes, the development of a new program in either an academic or industrial setting, publicizing mathematics so as to make mathematics accessible to the general public, developing mathematics displays, establishing and supporting mathematics conferences and competitions for students, etc.

Nominations must be submitted on the "Nomination Form" available from the CMS office. To assure uniformity in the selection process, please follow the instructions precisely. Documentation exceeding the prescribed limits will not be considered by the Selection Committee. Individuals who made a nomination in 1998 can renew this nomination by simply indicating their wish to do so by the deadline date. Only materials updating the 1999 Nomination need be provided as the original has been retained.

Nominations must be received by the CMS Office no later **April 30, 2000**. Please send six copies of each nomination to the following address:

Nous sollicitons la candidature de personnes ou de groupe de personnes ayant contribué de façon importante et soutenue à des activités mathématiques éducatives au Canada. Le terme "contributions" s'emploie ici au sens large; les candidats pourront être associés à une activité de sensibilisation, un nouveau programme adapté au milieu scolaire ou à l'industrie, des activités promotionnelles de vulgarisation des mathématiques, des initiatives, spéciales, des conférences ou des concours à l'intention des étudiants, etc.

Les candidatures doivent nous être transmises via le "Formulaire de mise en candidature" disponible du bureau de la direction de la SMC. Pour garantir l'uniformité du processus de sélection, veuillez suivre les instructions à la lettre. Toute documentation excédant les limites prescrites ne sera pas considérée par le comité de sélection. Il est possible de renouveler une mise en candidature présentée l'an dernier, pourvu que l'on en manifeste le désir avant la date limite. Dans ce cas, le présentateur n'a qu'à soumettre des documents de mise à jour puisque le dossier original a été conservé.

Les mises en candidature doivent parvenir au bureau de la SMC avant **le 30 avril 2000**. Veuillez faire parvenir vos mises en candidature en six exemplaires à l'adresse suivante:

**The Adrien Pouliot Award / Le Prix Adrien-Pouliot**
**Canadian Mathematical Society / Société mathématique du Canada**
**577 King Edward, Suite 109**
**P.O. Box 450, Station A / C.P. 450, Succ. A**
**Ottawa, Ontario K1N 6N5**

## CMS Distinguished Service Award / Prix de la SMC pour service méritoire

In 1995, the Society established this award to recognize individuals who have made sustained and significant contributions to the Canadian mathematical community and, in particular, to the Canadian Mathematical Society.

The first awards were presented at the 1995 Winter Meeting in Vancouver to Donald Coxeter, Nathan Mendelsohn, John Coleman, Maurice L'Abbé and George Duff. Awards were presented at the 1996 Winter Meeting in London, Ontario to David Borwein and P.G. (Tim) Rooney and at the 1999 Summer Meeting in St. John's, Newfoundland to S. Swaminathan and Michael Doob.

Nominations should include a reasonably detailed rationale and be submitted by **March 31, 2000**, to the address below.

En 1995, la Société mathématique du Canada a créé un nouveau prix pour récompenser les personnes qui contribuent de façon importante et soutenue à la communauté mathématique canadienne et, notamment, à la SMC.

Les premiers lauréats furent honorés lors de la réunion d'hiver 1995 à Vancouver aux Donald Coxeter, Nathan Mendelsohn, John Coleman, Maurice L'Abbé et George Duff. Les prochains lauréats, David Borwein et P.G. (Tim) Rooney, furent honorés lors de la réunion d'hiver 1996 à London, Ontario et S. Swaminathan et Michael Doob, ont été honorés à la réunion d'été 1999 à St. John's, Terre-Neuve.

La période de mises en candidature est en cours; prière de présenter des dossiers suffisamment détaillés et de les faire parvenir, le **31 mars 2000** au plus tard, à l'adresse ci-dessous.

**Selection Committee / Comité de sélection**
**Distinguished Service Award / Prix pour service méritoire**
**577 King Edward, Suite 109**
**C.P./P.O. 450, Succursale / Station A**
**Ottawa, Ontario K1N 6N5**


## DEPARTMENT OF MATHEMATICS AND STATISTICS
### *Mathematics*

The Department of Mathematics and Statistics at the University of Guelph invites applications for a full-time tenure track position to start September 1, 2000 at the rank of Assistant Professor in the area of Mathematics. Our current graduate program in mathematics emphasizes Dynamical Systems, Mathematical Biology, Numerical Analysis and Operations Research. Minimum qualifications are a Ph.D. and evidence of strong research and teaching ability. Salary will be commensurate with qualifications and experience. Candidates should submit by **February 29, 2000**, a curriculum vitae to **J.P. Mokanski, Chair, Department of Mathematics and Statistics, University of Guelph, Guelph, Ontario N1G 2W1. Fax: (519) 837-0221.**

UNIVERSITY of GUELPH

*In accordance with Canadian Immigration requirements, this advertisement is directed to Canadian citizens and permanent residents of Canada. This appointment is subject to final budgetary approval.*

*The University of Guelph is committed to an employment equity program that includes special measures to achieve diversity among its faculty and staff. We therefore particularly encourage applications from qualified aboriginal Canadians, persons with disabilities, members of visible minorities and women.*


## UNIVERSITY OF VICTORIA – VICTORIA, BRITISH COLUMBIA
## DEPARTMENT OF MATHEMATICS AND STATISTICS

The Department of Mathematics and Statistics at the University of Victoria invites applications for a Senior Instructor's position to commence July 1, 2000. Applicants should have at least a Masters degree in Mathematics or a related discipline, and a strong commitment to teaching.

The position of Senior Instructor is a teaching-only position. This position is subject to funding and to approval by the Board of Governors of the University of Victoria. Initial appointment is for two years or four years (renewable), depending on prior experience at the University of Victoria. The successful applicant will be expected to teach 3 courses per term and has the option to also teach in the summer.

The University of Victoria is an employment equity employer and encourages applications from women, persons with disabilities, visible minorities, and aboriginal persons. In accordance with Canadian Immigration requirements, this advertisement is directed to Canadian Citizens and Permanent Residents. However, if suitable Canadian applicants cannot be found, other individuals will be considered.

Applications should include a curriculum vitae and three letters of reference, and should be sent to:

**Dr. Reinhard Illner, Chair**
**Department of Mathematics and Statistics**
**University of Victoria**
**PO Box 3045 STN CSC**
**Victoria BC V8W 3P4 CANADA**

**Telephone: (250) 721-7436 FAX: (250) 721-8962**
**E-Mail: acme@math.uvic.ca http://www.math.uvic.ca**

The CLOSING DATE for applications is **FEBRUARY 15, 2000**

## QUEEN'S UNIVERSITY – KINGSTON, ONTARIO
## DEPARTMENT OF MATHEMATICS AND STATISTICS
### Professor in Statistics

Applications are invited for a full professorship in Statistics in the Department of Mathematics and Statistics at Queen's University. The salary will be commensurate with qualifications and experience.

The successful applicant will be well known in the international statistical community and have shown leadership in research and in the profession, or will exhibit clear potential in these regards. Applicants are expected to have a record of achievement in both theoretical and applied statistics and will be expected to lecture to graduate and undergraduate students and supervise graduate research studies.

Opportunities exist for collaboration with groups in several Faculties at the University, including clinical trials, statistical process control, and ergonomics.

Applications, with curriculum vitae, a list of publications, and the names of five referees, should be submitted no later than **March 15, 2000** to

**Professor J. A. Mingo, Associate Head**
**Department of Mathematics and Statistics**
**Queen's University, Kingston**
**Ontario, K7L 3N6 Canada**
**fax: (613) 533-2964**
**e-mail: position@mast.queensu.ca http://www.mast.queensu.ca**

More information can be obtained from Professor Mingo directly or from Professor A. M. Herzberg or Professor J. T. Smith – telephone (613) 533-2390.

In accordance with Canadian Immigration requirements, priority will be given to Canadian citizens and landed immigrants. Queen's University is committed to employment equity and welcomes applications from all qualified women and men, including visible minorities, aboriginal people, persons with disabilities, gay men, and lesbians.

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## RATES AND DEADLINES / TARIFS ET ÉCHÉANCES

| **Net rates/Tarifs nets** | **Institutional Members**<br>**Membres institutionels** | **Corporate Members**<br>**Membres organisationnels** | **Others**<br>**Autres** |
|---|---|---|---|
| Full Page | $ 200 | $ 375 | $ 500 |
| 1/2 Page | $ 120 | $ 225 | $ 300 |
| 1/4 Page | $ 70 | $ 130 | $ 175 |
| Inserts: maximum 4 pages | $ 160 | $ 300 | $ 400 |
| Surcharges apply for prime locations - contact notes@cms.math.ca<br>Des suppléments sont applicables pour des places de choix - communiquer avec notes@smc.math.ca | | | |

| **Issue/Numéro:** | **Deadline/Date limite:** |
|---|---|
| February/février | December 15 décembre |
| March/mars | January 15 janvier |
| April/avril | February 15 février |
| May/mai | March 15 mars |
| September/septembre | July 15 juillet |
| October/octobre | August 15 août |
| November/novembre | September 15 septembre |
| December/décembre | October 15 octobre |
| **Max. page size/Taille max. des pages:**<br>Back page/4e de couverture: 7.5 x 8.5 in./pouces<br>Inside page/page intérieure: 7.5 x 10 in.pouces | |

*Les Notes de la SMC sont postées la première semaine du mois de parution. L'adhésion à la SMC comprend l'abonnement aux Notes de la SMC. Le tarif d'abonnement pour les non-membres est de 40* $ *CAN si l'adresse de l'abonné est au Canada et de 40* $ *US autement.*

# CALENDAR OF EVENTS / CALENDRIER DES ÉVÉNEMENTS

**MARCH 2000** **MARS 2000**

**6–10** Fourth International Conference on Operations Research (Havana, Cuba)
*lorch@mathstat.yorku.ca*

**24-25** Colloquiumfest in honour of the 60th birthday of Murray Marshall (University of Saskatchewan) *skuhlman@snoopy.usask.ca*

**MAY 2000** **MAI 2000**

**5–7** Unified Congress of Mathematical Associations and Groups of Quebec (Université Laval), a WMY2000 event
*pallascio.richard@uqam.ca*

**JUNE 2000** **JUIN 2000**

Canadian Mathematics Education Study Group Meeting (UQAM, Montreal) *Dates to be announced*

**4–7** Annual Meeting of the Statistical Society of Canada (Ottawa, Ontario) *André Dabrowski: adrsg@uottawa.ca*

**4–8** Canadian Annual Operator Algebra Symposium (Fields Institute, Toronto, Ontario) *elliott@math.utoronto.ca; choi@math.utoronto.ca*

**8–9** Symposium on the Legacy of John Charles Fields (The Royal Ontario Museum, Toronto); a WMY2000 event
*www.fields.utoronto.ca*

**10–13 MATH 2000 (McMaster University, Hamilton, Ontario)**
Participating Societies include the Canadian Mathematical Society (CMS), the Canadian Applied and Industrial Mathematics Society (CAIMS), the Canadian Operational Research Society (CORS), the Canadian Symposium on Fluid Dynamics (CSFD), the Canadian Society for the History and Philosophy of Mathematics (CSHPM) and the Canadian Undergraduates Mathematics Conference (CUMC). A WMY2000 event
*www.cms.math.ca/Events/math2000*

**12–15** Integral Methods in Science and Engineering (Banff, Alberta) *Peter.Schiavone@ualberta.ca*

**JULY 2000** **JUILLET 2000**

**10–14** Third European Congress of Mathematics (Barcelona) *3ecm@iec.es; http://www.iec.es/3ecm/info.htm*

**11–25** 41st International Mathematical Olympiad (Korea)

**17-22** XIII International Congress on Mathematical Physics (Imperial College, London) *http://icmp2000.ma.ic.ac.uk*

**30-Aug 5** 7th International Conference on Radicals - ICOR 2000 (Innsbruck) *Rainer Mlitz mlitz@umbriel.tuwien.ac.at*

**31–Aug 7** International Congress on the Teaching of Mathematics (ICME-9)(Tokyo/Makuhara)
*http://www.ma.kagu.sut.ac.jp/ icme9/*

**AUGUST 2000** **AOÛT 2000**

**7–12** AMS Meeting (Los Angeles); a WMY2000 event
*www.ams.org/meetings/*

**SEPTEMBER 2000** **SEPTEMBRE 2000**

**22–24** American Mathematical Society Central Section Meetings (University of Toronto)
*http://www.ams.org/meetings/*

**DECEMBER 2000** **DÉCEMBRE 2000**

**10–12 CMS Winter Meeting / Réunion d'hiver de la SMC (University of British Columbia, Vancouver, B. C.)**
*Monique Bouchard: meetings@cms.math.ca*

**JUNE 2001** **JUIN 2001**

**2–4 CMS Summer Meeting / Réunion d'été de la SMC (University of Saskatchewan, Saskatoon, Saskatchewan)**
*Monique Bouchard: meetings@cms.math.ca*

Canadian Mathematics Education Study Group Meeting (University of Alberta, Edmonton)

Annual Meeting of the Statistical Society of Canada (Vancouver, British Columbia)

**DECEMBER 2001** **DECEMBRE 2001**

**CMS Winter Meeting / Réunion d'hiver de la SMC (York University, Toronto, Ontario)**
*Monique Bouchard: meetings@cms.math.ca*

**JUNE 2002** **JUIN 2002**

**CMS Summer Meeting / Réunion d'été de la SMC (Université Laval, Québec, Québec)**
*Monique Bouchard: meetings@cms.math.ca*

**AUGUST 2002** **AOÛT 2002**

**20–28** International Congress of Mathematicians, (Beijing, China)
*cms@math08.math.ac.cn; http://icm2002.org.cn/*

**DECEMBER 2002** **DECEMBRE 2002**

**CMS Winter Meeting / Réunion d'hiver de la SMC (University of Ottawa / Université d'Ottawa, Ottawa, Ontario)**
*Monique Bouchard: meetings@cms.math.ca*

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**MELVYN B. NATHANSON,** Lehman College, CUNY, Bronx, NY

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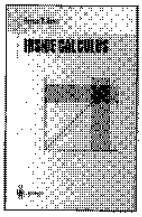


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