CMS

NOTES

de la SMC

FROM THE PRESIDENT'S DESK

Jonathan Borwein
Welcome Back

(voir la page 16 pour la version française)

It is a pleasure to write my first message as President of the Canadian Mathematical Society, and a privilege to serve as the first President of the new century. I would especially like to express my personal thanks to my immediate predecessor Richard Kane for the deep and diverse service he has offered to our community – as CMS President and otherwise.

In particular, Richard has brought near completion the review of CMS activities, initiated by Kathy Heinrich, which spawned ten committees (one of which was dissolved) and an ad hoc review of the Society's electronic services. Many of the ensuing recommendations have already been acted upon.

As an illustration, the review of the Executive Office has already led to reorganization of jobs in the Ottawa office and I would like to welcome Roch McLean as our new full time Manager, Finance and Accounting. It will be a central job for the Executive and the Society to complete the implementation process in the coming year.

Over the last year as President-Elect I have been forcibly but pleasantly reminded of how hard and effectively our Executive Office works and of the many activities the Society is engaged in.

I can not overstate how well served we are by the voluntary effort of so many of our members, as with the recent review process. Whether we choose the comparison with other Canadian academic societies or with foreign mathematical societies, we can take some considerable pleasure in both the scale and level of function we provide through our annual meetings and prizes, active publication programme, sponsored high school competitions and Math Camps (there will be eight this year in six provinces), Endowment Fund Grants Competition (now making its second call for proposals via Camel) and much else.

Central to this year's activities was a highly successful Math 2000 joint summer meeting of the following six societies: Canadian Mathematical So-

EDITORIAL

S. Swaminathan

Math 2000 was a meeting of minds. Six different math organizations combined their summer conference activities in celebration of World Math Year 2000 at McMaster University, Hamilton, Ontario, in June. The meeting was well attended. There were many plenary talks and parallel sessions which made the choice difficult for many delegates who were milling around the basement corridors of Togo Salmon Hall and other buildings hurrying from one talk to another.

One of the highlights of the conference was the public lecture of James Stewart, the very successful calculus text author, on *How to enliven the mathematics classroom.* He offered entertaining suggestions for engaging students' attention in the classroom in such a way as to increase their understanding and make them more active listeners. He discussed the use of technology, applications, contests and historical interludes. One of the comments that I heard about this talk is: "It is great to use technological aids to explain topics like limits and areas and even make up stories to enliven word problems, but most of us teaching multi-section classes have to keep in step with other instructors in covering (or uncovering) the prescribed portions within the time allotted; there is no time for any innovation."

Teachers of calculus range from veterans donning a suit and tie, who stick to classical ways of teaching using the blackboard, to neophytes in jeans and T-shirts with a cell phone clipped to their belt, who use overhead projectors, graphing aids and even powerpoint projection from lap-tops. Many instructors have started using the Web to post and receive assignments, and also e-mail to communicate with students.

The question arises as to how we can effectively use technological aids in the classroom. I invite readers to submit their thoughts on the matter in the form of letters to the editor or as articles.

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Math 2000 aura été une rencontre d'esprits. En juin, six associations mathématiques ont tenu un congrès estival conjoint à l'occasion de l'an 2000, année internationale des mathématiques, à l'Université McMaster à Hamilton (Ontario). Le congrès, qui a attiré un bon nombre de participants, offrait de nombreux symposiums et séances parallèles, parmi lesquels bien des participants ont eu du mal à choisir, ce qui les a obligés à dévaler les couloirs sous-terrains du pavillon Togo Salmon et d'autres bâtiments pour passer d'une séance à l'autre.

L'un des haut-faits du congrès aura certes été la conférence publique de James Stewart, l'auteur bien connu du manuel de calcul différentiel et intégral, intitulé *How to enliven the mathematics classroom.* Il a notamment donné des suggestions fort amusantes pour attirer l'attention des étudiants en classe de manière à augmenter leur compréhension et à en faire des auditeurs plus actifs. Il a aussi parlé du recours à la technologie, à diverses applications, à des concours et à des intermèdes historiques. Voici l'un des commentaires que j'ai entendu au sujet de cette conférence : "C'est très bien d'utiliser des outils technologiques pour expliquer des su-

FIELDS MEDALLISTS IN TORONTO

Peter Fillmore, Dalhousie University

To this observer at least the symposium **The Legacy of John Charles Fields**, which took place in Toronto in June, was a great – if not unqualified – success. The event, organized by a Fields Institute Committee chaired by George Elliott, was conceived as a WMY2000 event to improve awareness of the Canadian connection to the Fields medals.

Vaughn Jones and Alain Connes

The programme consisted of lectures by nine Fields medallists and two historians, together with a panel discussion and a banquet. A large crowd of mathematicians was on hand to enjoy the festivities but, in spite of the significance of the event, the press failed to take notice.

The kick-off lecture was given by Sir Michael Atiyah, tracing the evolution of mathematics over the past century. This was an excellent choice, both as a lecturer and because many would agree that Atiyah is the logical inheritor of the mantle worn by Hilbert and Poincaré a century ago. He began with a discussion of some of the main trends of the century: local to global, few to many (dimensions), commutative to noncommutative, linear to nonlinear. Next came a fascinating development of "the basic dichotomy", geometry vs algebra, touching on the related dichotomies space vs time, concept vs experiment and understanding vs computation. This last was offered with tongue somewhat in cheek and identified as "a Faustian bargain", offering the soul (geometry) for power (algebra). Then Sir Michael considered some of the most significant mathematical developments of the century (homology, K-theory, Lie groups), followed by a description of the enormous impact of physics on mathematics. Finally we had a peek into the 21st century, which might well turn out to be the century of "quantum mathematics" – the analysis, topology,

geometry and algebra of nonlinear function spaces. We can anticipate progress on the open problems of low-dimensional geometry, which he termed "an embarrassment."

Over the next two days we heard stimulating lectures by Fields medallists Kontsevich, Connes, Jones, Milnor, Gowers, Baker and Smale, and by historians Tom Archibald (Acadia) and Michael Monastyrsky.

The participants in the panel discussion were Tim Gowers, Efim Zelmanov, Lisa Jeffery, Alan Baker, Richard Borcherds, Richard Kane (moderator), Jim Arthur, Michael Atiyah, Stephen Smale and Cathleen Morawetz. Here is a partial account:

KANE: I'll begin by asking four or five questions concerning the general direction of research today. Then we'll go to questions from the floor. First, what are the most important and seminal areas of research in mathematics? What problems will drive research in the 21st century?

MORAWETZ: Biological science and engineering will play a role.

SMALE: I've written a paper about this [in the IMU volume "Mathematics: Frontiers and Perspectives"]. By developments in science and technology generally, in particular in communications and computation. "P = NP" is the most important problem of the last half-century.

ATIYAH: I agree but would highlight the link with physics – it will have widespread impact on mathematics.

ARTHUR: Mathematics itself is generating important and interesting problems. Problems from different areas of mathematics have shown themselves linked in fundamental ways.

BORCHERDS: Physicists have developed a mass of material that hasn't been properly digested.

BAKER: I forsee interesting developments in number theory and algebraic geometry.

JEFFERY: I too highlight the link with mathematical physics.

ZELMANOV: Physics can have a positive impact with all areas of mathematics.

GOWERS: I am wary of predictions – I tend to work on what interests me at the moment.

KANE: What interactions do you forsee with physical science, biological science, technology and engineering? Will biological science replace physical science as the driving force in mathematics in the next century?

MORAWETZ: I'm not convinced about the biological sciences. The study of organs (e.g. the heart) will be important. As soon as rates can be measured sufficiently accurately we'll be able to use calculus.

SMALE: I'm not convinced of the importance of physics. Biology will provide problems, such as how the brain works, which haven't been devised yet.

ATIYAH: I'm told that biology proceeds by chance, as in evolution. If so there may be no role for mathematics. The relationship between mathematics and physics is much more fundamental.

ARTHUR: There appears to be something rigid or inevitable about physics, unlike biology.

KANE: What about the future impact of computers?

GOWERS: It will be very profound. In another hundred years there will be programs that can do mathematics as well as we can.

ZELMANOV: I disagree. The computer creates new areas of mathematics, for example, cryptography.

Sir Michael Atiyah

JEFFERY: It will simplify computations but probably not proofs.

MORAWETZ: There are no theorems about shocks, and there probably won't be. Instead problems in the area will be handled by computation.

ATIYAH: I disagree with Tim [Gowers], but it would be interesting to think about how it might be done.

SMALE: We'll see probabilistic or random elements in the study of biology.

ARTHUR: Wiles's proof seems 'rigid', and yet is very roundabout and non-constructive.

KANE: How highly should we rate contemporary mathematics, relative to earlier eras? to other disciplines?

ATIYAH: By any standard mathematics is progressing very strongly. It is in a very healthy state. Mathematics is an old subject and a big one. Many newer ones may have an advantage. But mathematics has a "self-distilling" ability that allows it to go forward in spite of an accumulating volume of knowledge.

KANE: We'll now proceed to questions from the audience.

PETER BORWEIN: Would you care to speculate on possible new areas of research?

MORAWETZ: Perhaps turbulence. This was one of Hilbert's problems, but there has been little progress.

SMALE: Theory of learning.

ATIYAH: The most exciting developments are the unexpected ones!

BENOIT CHARBONNEAU: People in Canada, especially Quebec, seem to be afraid of mathematics. Is it the same elsewhere?

MORAWETZ: It starts at the elementary school level, where teachers are afraid of mathematics.

GOWERS: We need to present mathematics the way it was discovered.

CHRISTOPHER PHILLIPS: What about the impact of computers on mathematics teaching?

ATIYAH: Use them, but not as a substitute for thought.

FROM THE INSTITUTES

On-Line Videos from PIMS

PIMS is now offering lectures over the internet using on-demand streaming video. Lectures are available in Realvideo format, together with high resolution JPEG images of the speaker's slides, when possible. Thirteen lectures are available at www.pims.math.ca/video. Recent titles include "Geometric unfolding of a difference equation" by Christopher Zeeman, "The mathematics in the art of M.C.Escher" by H.S.M.Coxeter, and "Hilbert's 10th problem: What can we do with Diophantine equations? " by Yuri Matiyasevich.

PIMS–Kananaskis

PIMS has announced plans to establish a permanent facility in the Albertan Rockies to help support the research infrastructure of North America's mathematical scientists through partnerships and collaborations with their colleagues in the Canadian community.

The Board of Directors of the Pacific Institute for the Mathematical Sciences has given the green light for the immediate development of the PIMS International Research Center at Kananaskis (PIMS-K). The purpose is to create a center for high-level scientific interaction in mathematical research and applications. The proposed model is inspired by the highly successful program of the Mathematisches Forschungsinstitut Oberwolfach in Germany and would provide a resource unique in North America. Like Oberwolfach, the center's operating budget would be structured to ensure that all Canadian mathematical scientists –irrespective of geographic location– would have the same access to its programs.

More than 80 focused workshops will be developed over each two-year cycle, hence ensuring the participation of a broad spectrum of the Canadian mathematical science community, including post-doctoral fellows and graduate students. PIMS-K will also host training sessions for school and high school teachers as well as training camps to prepare Canadian teams for national and international mathematical competitions.

Discussions are underway with the other research institutes and the professional societies. The program will be steered by a national panel, and funding is being sought from the private sector, provincial governments, NSERC and the National Science Foundation. The facility is scheduled to open in April 2003.

New PIMS Prizes

PIMS has announced the creation of new prizes in the mathematical sciences.

PIMS Research Prize: Awarded for a particular outstanding contribution to the mathematical sciences that was disseminated during the five-year period prior to the award being given. Open to Canadian citizens, permanent residents of Canada and residents of Pacific Rim countries who maintain academic ties to the Canadian mathematical sciences community.

PIMS Education Prize: Awarded to a member of the PIMS community who has made a significant contribution to education in the mathematical sciences. This prize is intended to recognize individuals from the PIMS member universities or other educational institutions in Alberta and British Columbia, who have played a major role in encouraging activities which have enhanced public awareness and appreciation of mathematics, as well as fostering communication among various groups and organizations concerned with mathematical training at all levels.

PIMS Industrial Outreach Prize: Awarded to an individual who has employed mathematical analysis in the resolution of problems with direct industrial, economic or social impact. This prize is intended for individuals from the academic, private and government sectors. This prize will be given to individuals who at the time of nomination are Canadian citizens or permanent residents of Canada.

The value of each prize is $3000. For more information, please see the webpage http://www.pims.math.ca/prizes.

Fields Director

Don Dawson has stepped down as Director of the Fields Institute for Research in Mathematical Sciences, effective June 30, 2000. In his announcement, Board Chairman John R. Gardner said, "the contribution that Don has made to the Institute during his four years at the helm has been enormous. To Don, and to his wife Betty, we owe a great debt of gratitude."

The Institute's Board of Directors has appointed Deputy Director Bradd Hart to serve as Acting Director.

National Programme Committee

The three Canadian Institutes in the Mathematical Sciences, Centre de recherches mathématiques (CRM), Fields, and Pacific Institute for the Mathematical Sciences (PIMS), have initiated a programme for the joint support of activities in the mathematical sciences. For the year April 1, 2000 to March 31, 2001 the institutes have allocated up to $100,000 for activities under this programme, under the administration of the National Programme Committee, chaired by Dr. Michael Lamoureux.

The mandate of this Committee charges it with making recommendations to the Directors on funding such events based on their scientific value and appropriateness of budget. This six-member committee received approximately two dozen applications in the September 1999 and March 2000 competitions. Funding has been announced for the following eleven events:

- Mathematical Year 2000 meeting, Université Laval, May 5 - 7, 2000

- Western Canada Linear Algebra Meeting, University of Manitoba, May 26 - 27, 2000.

- Special Functions 2000 Meeting, Arizona State University, May 29 - June 9,

- Statistical Society of Canada, 2000 Conference, Ottawa, Ontario, June 4 - 7, 2000

- CMS/CAIMS Math 2000 Meeting, McMaster University, June 10 - 13, 2000

- Topological and Variational Methods in Nonlinear Analysis, Warsaw, Poland, June 19 - 23, 2000

- Approximation, Complex Analysis and Potential Theory, Université de Montreal, July 3 - 7, 2000

- First Prairie Industrial Problem Solving Workshop, Brandon, Manitoba, August 7 - 11, 2000

- 12th Canadian Conference on Computational Geometry, Fredericton, New Brunswick, August 2000

- CITA/ICAT Meeting, Toronto, Ontario, August 26 - 30, 2000

- CMS Winter Meeting, University of British Columbia, December 10 - 12, 2000
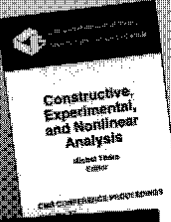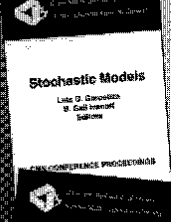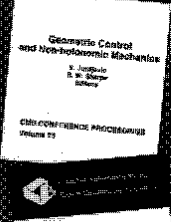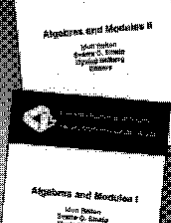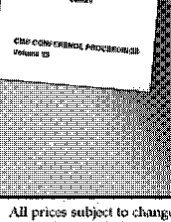
A call for proposals will be made semi-annually with proposals accepted for consideration on September 15 and March 15. Details of the application process can be found at http://www.fields.utoronto.ca/proposals/natprogcomm.html. Submissions will be to the Deputy Director of the institute administering the programme in that year following the guidelines available on the web site of that institute. The next competition will be September 15, 2000 with applications to be sent directly to:

Dr. Bradd Hart,
Chair, National Programme Committee
The Fields Institute for Research in Mathematical Sciences
222 College Street, Second Floor
Toronto, Ontario
M5T 3J1
or by email to:
npc@fields.utoronto.ca

RESEARCH NOTES

Noriko Yui and James D. Lewis, Column Editors

Leah Keshet – A Profile

Leah Keshet holds a model of an actin filament network

Mathematical biologist Leah Keshet is one of a growing number of interdisciplinary researchers who use mathematical modelling to help solve some of science's most puzzling questions.

What keeps a school of fish or a swarm of bees together? What forms or breaks up a string of molecules? What controls the shape and movement of a cell? Why do nerve cells degenerate and die in diseases such as Alzheimer's and ALS. The common link in these questions is that they all involve highly complex systems. Leah Keshet uses mathematical tools such as differential equations and computer modelling rather than *in vitro* experiments to try to answer them. Keshet says her binary love for both math and biology is inherited. "My mother [Tikvah Edelstein] was a biologist and my father [Michael Edelstein] is a mathematician. I was fascinated with both areas and eventually wound up in the middle."

Her initial research involved modelling the way that actin filaments – components of the cytoskeleton or the structural scaffolding of cells – interact to form different kinds of structures, such as bundles, loose networks, or gels, and what role this plays in disease. In cancerous cells, the actin cytoskeleton is one of the cellular components that can be severely affected, resulting in the abnormal motion of these cells. In cystic fibrosis, cells spill out very long actin filaments that produce a heavy mucus in the lungs. "Polymer chemistry has traditionally been dominated by physical chemistry and thermodynamic techniques." Keshet notes. "I look at these problems from a kinetic and differential equations perspective."

Keshet and associates Alex Mogliner and Danny Grunbaum have also been looking at a much larger picture – the complexity of swarming behaviour in animals and insects. They use mathematical models to shed light on what keeps a swarm or flock together, what governs its shape, and why it can travel for long distances without losing individuals. This research has implications for behavioural ecology, conservation of natural resources such as fish, management strategies for bee farming, and pest control.

An exciting development for Leah Keshet and her math-bio colleagues Robert Miura and Yx Li was the announcement of major funding by the federal government for The Mathematics of Information Technology and Complex Systems (MITACS), a new Network Centres of Excellence (NCE). This initiative, of more than $14.5 million over four years, will bring together 175 researchers at 22 Canadian universities to develop new mathematical tools for Canadian industry. Keshet heads one of the biomedical MITACS teams.

In one of the MITACS projects, Keshet is studying signal transduction, the process of converting hormonal signals to cellular response which involves a complex biochemical cascade. She is working with Kinetek, a Vancouver-based pharmaceutical company, to model the architecture of these cascades in order to analyze the effects of hormonal signals and try to understand their role in diseases such as diabetes and cancer.

Another MITACS project is her work with associate Chris Shaw, student Magdalena Luca, and postdoctoral fellow Alexandra Chavez-Ross on neurodegenerative diseases such as Alzheimer's and ALS. In collaboration with industry partner In Silico (Boston), they are trying to discover how microglia (the brain's "immune cells") affect the balance between healthy and stressed neurons, and how excitotoxins (molecules that mimic some neurotransmitters) cause neural stress and degeneration.

from UBC Science, with permission

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The 6th CMS Krieger-Nelson Prize

Kanta Gupta

On June 12, 2000, at the MATH 2000 meeting hosted by McMaster University, the Canadian Mathematical Society presented Kanta Gupta (University of Manitoba) with the sixth Krieger-Nelson Prize.

Kanta Gupta is a world-renowned group theorist. She is the world leader in the study of automorphisms in varieties of groups and algebras. She has

proved a number of deep and fundamental results in this area, including the wildness of certain pro-unipotent automorphisms, using Fox derivatives. She has also obtained results of extraordinary significance on finitely based varieties of groups and group representations.

Kanta Gupta est une spécialiste de la théorie des groupes de renommée internationale. Elle est l'experte mondiale de l'étude des automorphismes dans les variétés de groupes et d' algèbres. Elle a prouvé plusieurs résultats fondamentaux et profonds dans ce domaine, portant notamment sur le caractère sauvage de certains automorphismes pro-unipotents, en utilisant les dérivées de Fox. Elle a également obtenu des résultats d'une importance exceptionnelle sur variétés de groupes de base finie et les représentations de groupes.

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Humboldt Foundation Award

Peter Lancaster

Peter Lancaster, a professor at University of Calgary since 1962, has been recognized by Germany's Alexander von Humboldt Foundation for his life's contribution to mathematics. Lancaster is to receive 100,000 marks, or roughly $70,000 to support his research at Technische Universität Darmstadt.

He will collaborate with Peter Hagedorn on vibration problems as they relate to gyroscopic systems.

The Humboldt Foundation is a nonprofit organization that enables highly qualified foreign scholars, from all disciplines, to carry out long-term research projects in Germany. Awards are granted on the basis of nominations from eminent German scholars.

Lancaster expects to spend three months in Darmstadt beginning this fall and as much as a year there over the next five years. An applied mathematician, his research interests have focused primarily on matrix theory and related fields, especially as applied to numerical analysis, vibrations, systems theory, and signal processing. The research into vibrations is relevant to aircraft stabilizing systems as well as classical problems related to spinning discs like CDs and flywheels. Gyroscopic forces come into play with fast revolutions and it's vital to know the boundaries of safe operation. Much of the present day research in the area of gyroscopic systems relates to space vehicles.

Lancaster was elected to the Royal Society of Canada in 1984. He has served as chair of the University of Calgary math department, president of the Canadian Mathematical Society, vice-president of the Canadian Applied and Industrial Mathematics Society, and undertook many committee tasks on behalf of NSERC. He graduated with an honours BSc in mathematics from the University of Liverpool in 1952. After five years in the aircraft industry he took a teaching post at the University of Singapore where his research career began in earnest. He obtained a PhD at the University of Singapore and joined the fledgling University of Alberta at Calgary in 1962. There were eight mathematicians in the department at that time.

Although he retired from teaching six years ago, he maintains an active research program and still supervises graduate and postdoctoral students. "They benefit from my experience and I benefit from their wild ideas." Next winter he'll teach a graduate course in systems theory and control. His current titles are professor emeritus and faculty professor.

from the Gazette, Univ. of Calgary

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Israel Halperin Prize

Alexandru Nica and Guihua Gong

The Israel Halperin Prize was presented to Guihua Gong (University of Puerto Rico) and Alexandru Nica (University of Waterloo) at the 28th Annual Canadian Symposium on Operator Algebras, held at the Fields Institute in June.

Gong was cited for his work on the classification problem for C*-algebras, and Nica for his work on free probability.

The Israel Halperin Prize is awarded quinquennially for outstanding work in operator algebras to members of the Canadian mathematical community within approximately ten years of the Ph.D. The previous winners are Man-Duen Choi (1980), Kenneth Davidson and David Handelman (1985), Ian Putnam (1990) and Nigel Higson (1995).

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Millenium Prize Problems

In order to celebrate mathematics in the new millenium, the Clay Mathemat-

ics Institute (CMI) of Cambridge, Massachusetts, has named seven "Millenium Prize Problems". They were announced during the Millenium meeting held on 24 May 2000 at the Collège de France. The Scientific Advisory Board of CMI selected these problems, focusing on important classic questions that have resisted solution over the years. The Board of Directors of CMI designated a $7 million prize fund, with $1 million allocated to each problem.

The members of the Scientific Advisory Board are Alain Connes, Arthur Jaffe, Andrew Wiles and Edward Whitten. Together with the Board of Directors, they have the responsibility to preserve the nature, the integrity and the spirit of the prize.

The problems are:

- P versus NP

- the Hodge Conjecture

- the Poincaré Conjecture

- the Riemann Hypothesis

- Yang-Mills existence and mass gap

- Navier-Stokes existence and smoothness

- the Birch and Swinnerton-Dyer Conjecture

Further details may be found at www.claymath.org.

LETTER TO THE EDITORS

Aleksandr Danilovich Aleksandrov, born August 4, 1912, died on July 27, 1999. An obituary can be read in its English translation in 'Russian Mathematical Surveys,' v. 54, no. 5, pp. 1016-1018. These four pages canvass the research activities which made him one of the 20th century's leading mathematicians. They give concrete examples of the insight and courage which he displayed as Rector of Leningrad University, particularly in his open and successful support of that university biologists in their resistance to the enthronement of Lysenkoism.

Aleksandrov participated for several weeks in the 1957 summer programme of the Canadian Mathematical Congress held in Banff and Edmonton. When I joined the Mathematics Department at the University of Alberta in 1959, colleagues there spoke very appreciatively of Aleksandrov's contributions and personality.

In addition to stories about his mathematical and mountain climbing skills, they spoke of his humour. One example: As the summer programme was coming to an end, he invited colleagues to be his guest at dinner in the Macdonald Hotel in Edmonton. As dinner was being served, he reached under the table from whence he brought forth a couple of bottles of vodka. Consternation reigned. Waiters dashed over to explain that this was forbidden. (In those days, although Alberta manufactured vodka, its consumption was forbidden in the province.) Eventually, the source of the excitement was explained to Aleksandrov. His comment: "Everybody has been telling me that this is a free country."

Lee Lorch, York University

EDUCATION NOTES
Ed Barbeau, Column Editor

In the coming academic year, this column will pursue further the issue of the formation of elementary teachers, an issue that has been subject to considerable debate recently at the spring meeting of the Canadian Mathematics Education Study Group in Montreal, and at a conference held in April at the Fields Institute. The broader community also seems to be taking the issue of providing opportunities for professional development of teachers more seriously. For example, NCTM has recently formulated the following position:

"The National Council of Teachers of Mathematics believes that schools must restructure the use of teacher time to enable teachers to implement a variety of activities aimed at enhancing students' learning. These activities should provide opportunities for teachers to reflect on their practice, support teachers' ongoing professional development and support a culture of professionalism."

As Harold W. Stevenson and James W. Stigler make clear in their book, *The learning gap: Why our schools are failing and what we can learn from Japanese and Chinese Education* (Summit Books, Simon & Schuster, 1992; ISBN 0-671-70983-6), Oriental teachers have much greater professional contact with mentors and colleagues, and this seems to make a difference to the confidence and competence of their functioning in the classroom. Over the past five years, eighteen school districts (involving 37000 students) on Chicago's North Shore have been embarking on an expensive program to improve student performance in part by improving the professsional activities of teachers. A detailed analysis is made of how well individual topics are taught, teachers' performances are videotaped and discussed with their peers, topics are taught more intensively when first raised to reduce the amount of repetition, there is less drill-type homework, use of the blackboard is favoured over that of the overhead projector, and time for professional development is included in the timetable. The consequence has been a performance on a par with the highest achieving countries in the recent TIMSS international study (the consortium of districts had their results tabulated apart from the rest of the US scores). But this has come at the cost of a lot of money, planning and energy, particularly to keep parents and politicians on track for the long haul. I continue to invite readers to submit accounts of preservice courses and inservice workshops that they are engaged in.

However, few Canadian mathematicians have the time and opportunity to be involved with elementary or secondary education, but almost all of us are teachers of undergraduate and graduate students. Accordingly, it would be useful to engage in a debate about how we structure our courses and programs, and, in particular, how we can effectively make use of technology. Faculty associations and unions are understandably leery of the use of the net for education, They see in it a possible means to decrease the number of tenured faculty and increase the number of contract workers left in a vulnerable position with respect to their careers, research opportunities and academic freedom. It seems to me that a proper use of distance-education techniques will still require a substantial personal link between teacher and student.

Even without recourse to the net, there are many alternatives to the standard lecture format already in place - seminars, problems courses, independent and small-group study, research opportunities. We would like to hear about some of these, and hope that you will tell us what you are doing and how well it works.

MATHEMATICS COURSES FOR ELEMENTARY EDUCATION STUDENTS AT LAKEHEAD

Teacher knowledge at the elementary level has been an area of interest lately, with the publication of new (NCTM) "Standards-based" curricula in many provinces. In-service initiatives such as the *Impact Math* Project in Ontario have included content support for teachers, and recently (May, 2000) a working group of the Canadian Mathematics Education Study Group discussed the issue of what should be included in mathematics courses for pre-service teachers.

In my experience, the majority of pre-service elementary teachers entering a mathematics course at university (prior to their methods courses) are anxious about having to do so. One hundred and forty six students enrolled in such a course at Lakehead University for the academic year 1999-2000 were asked the question, "What is your attitude toward mathematics at this point?" 10% did not answer the question or answered with something unrelated, 24% had positive attitudes, 20% said they found mathematics difficult but were willing to work hard at it, and 46% were very nervous or unhappy having to take the course, stating that they felt "frightened", "apprehensive", "terrified" or a sense of "dread". In other words, almost two-thirds were insecure of their abilities in mathematics.

Happily, such courses may be very powerful vehicles for influencing this situation. For example, in this same group, out of 36 attitude summaries handed in at the end of the course, 32 reported a noticeable change in attitude. Comments included: "it was absolutely wonderful to see math from a different point of view"; "it feels like the first time I've taken math"; "I now appreciate math like I never would have foreseen". Although the university course evaluations did not specifically address the attitude issue, the students' assessments of the course as a whole supported these percentages. In other words, it does not appear that there was a large group

with negative attitudes who did not answer the voluntary final survey.

These changes may have potential for long term benefits. For example, a graduate of the program whom I visited in her classroom displayed a strong reform based teaching environment in mathematics, and cited the content course, rather than the methods course, for providing this example. Since such content courses are often delivered by members of mathematics faculties, it is important that consideration be given to understanding of pedagogical issues. Ideally, a collaboration between mathematics faculty members and practising teachers or education faculty would be useful. It is crucially important that students in such courses be able to experience mathematics in a new (reform based) way, in order to give them positive experiences in the learning of mathematics.

At Lakehead University, this course is taught by a mathematics faculty member (myself) who also teaches for the school board and is involved in the mathematics education community. Although the size of the course is not ideal (nearly 150 students), a number of structures may be helpful in facilitating the learning. For example, students form groups of six at the beginning of the year, and one student is the leader for each month in the (full year) course. All collaborative learning tasks are packaged into handouts purchased at the beginning of term, upon which the groups work at various times. Weekly assignments, journal questions and two term projects round out the more traditional assessments. There is a strong problem solving focus to the course, and students have the opportunity to tackle the checkerboard problem, the handshakes problem, and the "staircase" problem (sum of the first n integers modelled by cubes), among others, during the course. Students are encouraged to record the steps in their own problem solving process as part of learning about their own functioning. Often, students who insisted that their mathematics backgrounds were poor at the beginning are surprisingly successful with these rich problems, and are thrilled at their success. Students are also strongly encouraged to develop (with support) a deeper understanding of the concepts of fractions, integers, equations and other topics using concrete models such as fraction pieces, number lines and balances. Because money is not available for purchase of such items, all are built by the students and many enjoy learning how to create their own manipulatives and concrete materials. An aesthetic component is also included in which mathematical patterns such as tessellations, quilt patterns, fractals, kaleidoscope patterns, and many others are created and shared by the students.

It is crucial that mathematics faculty charged with teaching such courses realize the importance of a reform based approach in course design, regardless of class size. Teachers must experience mathematics learning in a new way themselves in order to teach in a new way. Even if only some of these students go on to actually teach elementary students

themselves, the impact of such courses on the improvement of the teaching of mathematics in elementary schools is tremendously exciting.

—Ann Kajander, Lakehead University

AN UNDERGRADUATE COURSE ON TEACHING MATHEMATICS AT McMASTER

At the June 2000 meeting of the Society, Miroslav Lovric of the Department of Mathematics and Statistics at McMaster University described a new course which admirably fills two functions, getting competent teaching assistants for a first-year calculus course and providing undergraduates with teaching experience and the opportunity to polish their skills. Professor Lovric has posted on his website *http://icarus.math.mcmaster.ca/lovric/draft2u3.html* an article that he prepared for the meeting.

Like many universities, McMaster has large first year calculus courses. Three lectures and one tutorial are allotted for each week, and there are in addition five Maple labs per term. Members of the faculty do the lecturing, while teaching assistants look after the tutorials and labs, maintain office hours, mark and invigilate. In the past, many of these assistants were "borrowed" from other departments, and often were deficient in motivation, language skills, mathematical preparation and communication skills; regular meetings of the assistant complement were impossible to schedule.

In the fall of 1999, Professor Lovric decided to remedy the situation by establishing a fall-term credit project for advanced mathematics undergraduates entitled "Teaching Math" (TM). The majority of students were in second year with a few in the upper two years. About twenty students were selected on the basis of their mathematical background and experience; they were concurrently enrolled in the TM course and employed as teaching assistants for the first year calculus course. Initially, the TM course met daily, but later once per week for two hours. Introductory sessions dealt with the principles of good teaching practice, covered technical matters such as departmental support, and provided some intense group training sessions. In weekly sessions, the cadet teachers discussed journal articles and books, wrote critical reviews, heard lectures from various guests, were introduced to the history of mathematics, became familiar with some of the modern debates on calculus, practised oral and written communication, tried to examine what and how students really learn and mastered techniques of facilitating discussions. Considerable amount of time was spent discussing best ways of learning calculus - in particular, learning how to break down a given problem into easily digestible pieces. The weekly sessions provided the students with a chance to share their experiences in the tutorial sessions, and the lecturers an opportunity to monitor how well the tutorials were functioning. Each student was expected to do a self-evaluation after the

first session, after four weeks and at the end of the program, and suggest how they might revise their techniques.

The project was gauged a success. Students were enthusiastic about their teaching experience, became more skilful at organization, communication and time-management, deepened their understanding of both the mathematical content and how to present it, and were connected with younger students in their mathematics program. After completing the course, with their first-year teaching experience in hand, several students were used as teaching assistants for other courses in the mathematics department. The project will continue into the fall of 2000; graduates of the project will be available to help the new students, who will be selected through an interview.

While each student has to pay tuition for the course, they are paid for their employment. In the new session, the graduates of the previous year's course will be paid to act as mentors to the new students in the project.

Further information on the project can be obtained from the website:

http://icarus.math.mcmaster.ca/ projects/2u3.html.

A BANNER YEAR FOR CANADIAN STUDENTS IN THE 1999 PUTNAM

1999 was a vintage year for Canadian students and universities in the Putnam Competition. Not only did the University of Waterloo place first, beating out Harvard, Duke, Michigan and Chicago, but two other Canadian teams, from the University of British Columbia and Simon Fraser University, placed among the top ten teams. Congratulations to these distinguished competitors!

Placing first and qualifying for an award of $25000 was the team of the **University of Waterloo** consisting of **Sabin Cautis**, **Donny Cheung** and **Derek Kisman**. All three are former members of Canadian teams in the International Mathematical Olympiad. Sabin Cautis and Derek Kisman, ranking among the top six, were named as Putnam Fellows. The **University of British Columbia**, represented by **Joel Erickson**, **Jesse Goodman** and **Ho Sen Yung**, and **Simon Fraser University**, represented by **Arthur Kowalczyk**, **Tomasz Kowalczyk** and **Colin Percival**, received Honorable Mention, placing between sixth and tenth included. Colin Percival was also named as Putnam Fellow.

Apart from having three of the top six students, Canada counted one among the next eight, Joel Erickson of the University of British Columbia. Among the next group of ten were Jesse Goodman of the University of British Columbia, as well as Joel Kamnitzer and Wai Ling Yee of the University of Waterloo. **Wai Ling Yee** qualified for the Elizabeth Lowell Putnam Prize for top female competitor.

The following students received Honorable Mention (ranking between 26 and 61 inclusive): **Byung Chun**, University of Waterloo; **Bogdan Georgescu**, University of Calgary; **Pavel Gyrya**, University of Toronto; **Richard Hoshino**, Queen's University. **Pierre LeVan** of the University of Ottawa and **Manuel Zamfir**, of the University of Toronto also placed in the top hundred. In all, nine Canadian universities had students who placed among the top two hundred. A total of 2900 students from 431 colleges and universities in North America participated in the competition. A score of 39 out of 120 put a competitor in the top hundred while a score of about 22 was sufficient to rank among the top two hundred. The top score was 74.

-ciety / Société mathématique du Canada; Canadian Applied and Industrial Mathematics Society / Société de Mathématiques Appliquées et Industrielles; Canadian Operational Research Society / Société Canadienne de Recherche Opérationelle; Canadian Undergraduate Mathematics Conference / Congrès canadien des étudiants en mathématiques; 14th Canadian Symposium on Fluid Dynamics /14e Symposium canadien sur la dynamique des fluides; Canadian Society for History and Philosophy of Mathematics / Société canadienne d'histoire et de philosophie des mathématiques.

The meeting, hosted by McMaster University (www.cms.math.ca/-Events/summer00/), was certainly the largest "made in Canada" conference yet run with more than 500 participants (of whom 497 registered) and a dozen varied plenary lectures. A profusion of other successful events made for an unparalleled week in Canadian Mathematics. These other events included: a Fields Institute symposium on the Legacy of John Charles Fields, and the Mathematics of Information Technology and Complex System's (MITACS NCE) first annual meeting in Toronto. At MITACS the CMS co-sponsored a job fair and certainly intends to do so again at future meetings. I must also mention the CMS's appreciation for the joint sponsorship of research sessions at our meetings by the three national research institutes (CRM, Fields and PIMS).

Let me highlight some other recent activities.

In June, during our Summer meeting, I had the good fortune to attend the twentieth anniversary reunion of Canadian participation in the International Mathematical Olympiad, in Toronto. More than 60 of our 86 former team members were present, which certainly evidences how significant an event participation in the IMO is for most team members. On July 4, I was also present

at the annual team send-off at Simon Fraser. We held a lunch, well attended by the media, for the six students who represented Canada in Seoul from July 16-25. The students brought home a gold medal, two silver, a bronze and an honourable mention. The team placed 17th out of 82 countries competing.

Relatedly let me also congratulate all the students, coaches and universities on the spectacular performance of Canadians on the 1999 Putnam Competition (www.camel.math.ca/Communiques/-2000/putnam99.html). Perhaps not surprisingly former Olympiad team members did very well.

Our publications continue to do well in an uncertain and increasingly digital world. The CMS has completed the move of its CMS Books in Mathematics series to Springer New York from Wiley and the first five volumes are in press. Details may be seen on Camel. In June, the CMS also finalized a contract with the AMS for a parallel CMS Tracts in Mathematics series to be edited by Ken Davidson and Cam Stewart. Also, in the relatively near future both the CMB and CJM will move to new homes.

And finally let me remind you that the 2000 CMS Winter Meeting (www.cms.math.ca/Events/summer00/) will be run by UBC in downtown Vancouver. It promises to be an excellent Conference and a fitting end to the Society's Year Math 2000 activities.

AWARDS / PRIX

TEACHING EXCELLENCE AWARD

Dr. Yvonne Cuttle receives her award in Saskatoon

The Department of Mathematics and Statistics at the University of Saskatchewan is pleased to announce that Dr. Yvonne Cuttle was awarded the first University of Saskatchewan College of Arts and Science Teaching Excellence Award in the Natural Sciences on May 23, 2000.

For over 40 years, Yvonne has set and maintained a high standard of teaching excellence at the University of Saskatchewan. In the nomination for the award, this fact was supported by letters from many of her current and former students, a number of whom have gone on to academic or professional careers in mathematics and related disciplines. Yvonne's impact as a teacher and scholar has also gone beyond her interactions with students. In particular, she is well known to the CMS as the first Editor-in-Chief of the CMS Notes (1979-85).

She received a B.A. and M.A. from UBC in 1954 and 1956 respectively, Ph.D. from the University of Oregon in 1959 in Functional Analysis, and then she and her husband Percy Cuttle joined the faculty of the U of S Mathematics Department in 1959. Percy retired emeritus from the U of S June 30, 1985 and passed away January 1994. Yvonne retires from the U of S this year, June 30, 2000. She plans to continue her involvement with the department and the CMS as a member of the local organizing committee for the CMS summer 2001 meeting in Saskatoon and is kept busy by a number of other activities including chairing the Board of the Saskatoon SPCA.

ORDER OF MERIT

Sir Roger Penrose FRS has been awarded the Order of Merit. Amongst the current holders is Sir Michael Atiyah. Membership of the order is limited to 24 people at any one time.

LMS Newsletter, July 2000

Multimedia Fluid Mechanics
G. M. Homsy, H. Aref, K. S. Breuer, S. Hochgreb, J. R. Koseff, and B. R. Munson

An interactive tool for teaching undergraduate fluid mechanics. It includes experiments that demonstrate fluid mechanical phenomena, animations of important principles and concepts, virtual laboratories, interactive computational exercises, and other descriptive and illuminating material on applications. The product complements any of the standard textbooks and uses standardized notation and definitions.
2000
0-521-78748-3   CD-ROM   c.$19.95

The Discrepancy Method
Randomness and Complexity
Bernard Chazelle

Examines such topics as communication complexity, pseudo-randomness, rapidly mixing Markov chains, points on a sphere, derandomization, convex hulls and Voronoi diagrams, and other topics.
2000   448 pp.
0-521-77093-9   Hardback $64.95

Vortex Methods
Theory and Practice
Georges-Henri Cottet and Petros D. Koumoutsakos

Presents and analyzes vortex methods as a tool for the direct numerical simulation of impressible viscous flows.
2000   344 pp.
0-521-62186-0   Hardback $59.95

An Introduction to Maximum Principles and Symmetry in Elliptic Problems
L. E. Fraenkel

Describes the basic theory of the symmetry of solutions to second-order elliptic partial differential equations by means of the maximum principle. It proceeds from elementary facts about the linear case to recent results about positive solutions of nonlinear elliptic equations.
Cambridge Tracts in Mathematics 128
2000   350 pp.
0-521-46195-2   Hardback $74.95

Topics in Finite and Discrete Mathematics
Sheldon M. Ross

A concise lively survey of several fascinating non-calculus topics in modern applied mathematics. It covers probability, mathematical finance, graphs, linear programming, statistics, computer science algorithms, and groups.
2000   c.304 pp.
0-521-77259-1   Hardback   c.$74.95
0-521-77571-X   Paperback   c.$29.95

Derivation and Computation
H. Simmons

Explores the relationship between proofs and calculations and introduces simple type theory. Starting from the familiar propositional calculus, the author develops the central idea of an applied lambda-calculus. Ends with a set of exercises, some 200 in total.
Cambridge Tracts in Theoretical Computer Science 51
2000   410 pp.
0-521-77173-0   Hardback $69.95

Basic Proof Theory
Second Edition
Anne S. Troelstra and H. Schwichtenberg

Discusses and compares various types of formalization of first-order logic. Many sections have been rewritten to improve clarity, new sections have been added on cut elimination, and solutions to selected exercises have been included.
Cambridge Tracts in Theoretical Computer Science 43
2000   355 pp.
0-521-77911-1   Paperback   c.$34.95

A History Not Just for Topologists

Book Review by Keith Johnson, Dalhousie University

History of Topology
edited by I.M.James
Elsevier Science 1999
ix + 1056 pages
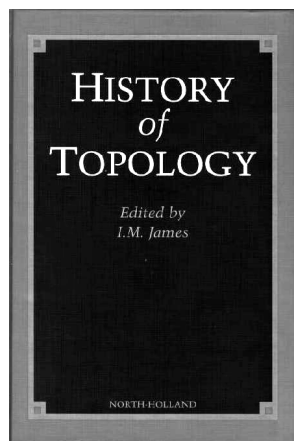
Of the 42 Fields medals awarded since the establishment of these prizes in 1936, 10 have been for accomplishments in topology. Given this prominence of topology in 20th century mathematics, it is surprising how little is generally known of the origins and evolution of the subject. The *History of Topology* addresses this situation, removing misconceptions (such as that topology was invented, fully formed, by Poincaré in 1900) and answering many questions (including the basic one "when, and by whom, was the term topology introduced?"). Professional topologists will need no urging to read this book. Most will have had

cause to refer to the 1995 *Handbook of Algebraic Topology* by the same editor and publisher, and many will have been saving an adjacent space on their bookshelf for this companion volume. This is not a book just for experts, however, and offers much to the larger mathematical community. Anyone who has taught a course in complex analysis and wanted a reference for the origin and later development of the winding number, or, in teaching a course in algebra, wanted to describe geometric applications of group presentations can refer their students here.

The book contains 40 articles by as many authors on different aspects of the history of topology. Fifteen of the articles trace the development of specific areas of research in topology, usually stopping before 1980. The range of areas is broad, from general topology to manifolds to H-spaces. Another group of articles trace the development of specific fundamental concepts (homotopy, differential forms, spectral sequence). There are biographies of some of the important figures in the subject, and an article by the editor with 20 short biographies including one of the Canadian Hugh Dowker. There is a reprint of Lefschetz's 1970 article on the early history of algebraic topology and a survey of the interaction of topology and physics which includes material up to the mid 90's.

The work to which the *History of Topology* can most naturally be

compared is Dieudonné's *History of Algebraic and Differential Topology* (Birkhäuser, 1989). The contrast is substantial. Dieudonné's book is a masterpiece of exposition, but narrow in focus and didactic in style. The current volume casts a wider net, gives a cleaner sense of the relation of topology to allied subjects, and does not have the selective gaps of a work by a single author of very definite tastes. There is, of course, a price to pay for this inclusiveness. There is some repetition (the Konigsberg bridge problem appears twice, as do accounts of some of Poincaré's work and of Max Dehn's escape from Nazi Germany) and a considerable variation in style (from Sarkaria's scholarly analysis of Poincaré's work to Hess's account of the history of rational homotopy theory which includes reminiscences of developments at the University of Toronto). Also, while the book's coverage is admirably broad, it would be impossible for everything to be included. In particular, there is no mention of the development of category theory from topology.

This is a valuable and welcome book, destined to become the standard reference for both historians and mathematicians. The authors and the editor deserve a vote of thanks from the mathematical community for their efforts in producing it. (The term "topology", by the way, was introduced in 1847 by Johann Benedikt Listing, a doctoral student of Gauss.)

COMMITTEES AT WORK

CMS Electronic Services Committee

Edgar Goodaire, Memorial University, Committee Chair

Passwords on Camel

The need to supply a user name and password in order to enter various areas of Camel (the CMS web site) has bothered some CMS members for a long time. Steps are being taken

to improve the situation. For example, if you access Camel from a site which is an institutional member of the CMS, you can now freely access all CMS journals in digital form. (If you can't, ask your administrative support person if your department has completed the required "On-Line Subscription Agreement"!)

The need to restrict access to the CMS Committee area

seems clear and few would argue with a request for identification from an individual attempting to change the CMS membership data base. On the other hand, how do members feel about letting anyone simply view the data base? At the moment, certain basic information about us is available for anyone to see—the sort of thing one expects to find in a hard copy membership directory—but a few additional items including rank, degree, involvement with CMS committees, gender and even age can currently be seen only by CMS members, and after identification (assuming we have given such details to the CMS in the first place.) To see for yourself, go to http://www.camel.math.ca, click on "Member Search/Recherche Membre," search for a CMS member and attempt to click on "more details" at the bottom of the screen.

Does this "members only" area need to be password protected? We could, for instance, remove password protection, simultaneously deleting all entries, and let CMS members then complete any blank areas they wish, with the knowledge that the information they give will be public.

Please write edgar@math.mun.ca with your views about the membership data base and with any other comments you may have on the password issue. I am especially interested to know where you get annoying and/or seemingly unnecessary requests for a password.

DU BUREAU DU PRÉSIDENT
Bienvenue

(see page 1 for the English version)

Je suis très heureux de vous présenter mon premier message en tant que président de la Société mathématique du Canada, et c'est pour moi un privilège d'être le premier président du nouveau siècle. J'aimerais remercier personnellement mon prédécesseur immédiat, Richard Kane, des nombreux et divers services qu'il a rendus à notre communauté, tant à la présidence de la SMC qu'à d'autres fonctions.

Pendant son mandat, Richard aura notamment mené presque à terme l'examen des activités de la Société, amorcé sous la présidence de Kathy Heinrich, examen qui aura mis à l'oeuvre dix comités (dont l'un a été dissout) pour l'examen et examen spécial des services électroniques. Bon nombre des recommandations découlant du travail de ces comités sont déjà mises en oeuvre. Celles qui concernaient les tâches administratives ont justement entraîné une réorganisation des postes au bureau d'Ottawa, puis à l'embauche au poste de gérant des finances et de comptabilité à plein temps de Roch McLean, auquel j'aimerais souhaiter la bienvenue. À ce titre, il jouera un rôle clé en aidant le comité exécutif et la Société à terminer la mise en oeuvre des recommandations pendant l'année à venir.

Au cours de la dernière année, à titre de président élu, j'ai constaté, par la force des choses, mais avec grand plaisir, l'ardeur au travail et l'efficacité du personnel de notre bureau administratif, ainsi que le grand nombre d'activités auxquelles participe la Société.

Je ne pourrai suffisamment insister sur la qualité des services que la Société reçoit d'un si grand nombre de bénévoles. Leur participation à l'examen auquel nous venons de nous livrer est un parfait exemple de cette contribution. Que nous nous comparions à d'autres associations canadiennes ou à des sociétés mathématiques étrangères, nous pouvons être très fiers du nombre et de la qualité de nos activités : Réunions et remises de prix annuelles, programme dynamique de publication, concours commandités pour élèves du secondaire et camps de mathématiques (il y en aura huit cette année dans six provinces), concours de bourses du fonds de dotation (qui en est à son deuxième appel à candidatures lancé sur Camel) et plus encore.

Le congrès Math 2000, qui a connu un franc succès, est certes l'une des activités qui ont le plus marqué cette année. Cette réunion estivale regroupait les six sociétés suivantes : Canadian Mathematical Society / Société mathématique du Canada; Canadian Applied and Industrial Mathematics Society / Société de mathématiques appliquées et industrielles; Canadian Operational Research Society / Société canadienne de recherche opérationelle; Canadian Undergraduate Mathematics Conference / Congrè s canadien des étudiants en mathématiques; 14th Canadian Symposium on Fluid Dynamics /14e Symposium canadien sur la dynamique des fluides; Canadian Society for History and Philosophy of Mathematics / Société canadienne d'histoire et de philosophie des mathématiques.

Ce congrès, tenu à l'Université McMaster (www.cms.math.ca/Events/summer00/), fut certainement l'un des plus importants jamais tenus au Canada. Elle a en effet attiré plus de 500 participants (dont 497 inscrits) et offert une douzaine de conférences principales sur des sujets variés. Quantité d'autres activités tout aussi réussies ont donné lieu à une semaine mathématique sans précédent au Canada. Parmi ces activités, mentionnons un symposium de l'Institut Fields sur l'héritage de John Charles Fields ainsi que la première assemblée annuelle du réseau MITACS, tenus à Toronto. Dans le cadre de cette dernière, la SMC a contribué à l'organisation d'un carrefour emploi, activité qu'elle compte

bien reprendre à l'occasion d'autres réunions. Je me dois également de mentionner à quel point la SMC est reconnaissante envers les trois instituts nationaux de recherche (CRM, Institut Fields, Institut Pacific) pour leur contribution aux séances scientifiques de nos réunions.

Permettez-moi de souligner quelques-unes de nos dernières activités :

En juin, au cours de notre Réunion d'été, j'ai eu la chance d'assister à des retrouvailles organisées à l'occasion du vingtième anniversaire de la participation canadienne à l'Olympiade internationale de mathématiques, à Toronto. Plus d'une soixantaine des 86 anciens participants étaient présents, ce qui illustre à quel point une participation à l'OIM est un fait marquant. Le 4 juillet, j'ai aussi assisté à l'Université Simon Fraser à la réception donnée pour souligner le départ de notre équipe pour

l'OIM. Nous avions organisé un dîner auquel ont assisté les six élèves qui ont représenté le Canada à Séoul (Corée du Sud) du 16 au 25 juillet derniers, ainsi que plusieurs journalistes. Les étudiantes remportes une médaile d'or, deux d'argent, un de bronze et un mention honourable. L'équipe s'est classée au dix-septième rang des 82 pays au competition.

À cet égard, je voudrais également féliciter les élèves, les entraîneurs et les universités des résultats spectaculaires obtenus par les participants canadiens au concours Putnam 1999 (www.camel.math.ca/Communiques/-2000/putnam99.html). Comme on pouvait s'en douter, les anciens membres de l'équipe canadienne à l'OIM ont fait très bonne figure.

Nos publications continuent de bien se porter malgré l'omniprésence du numérique et l'incertitude entourant ce nouveau média. La SMC a terminé

le transfert de sa collection d'ouvrages de mathématiques de chez Wiley à Springer (New York), et cinq volumes ont été publiés jusqu'à présent. Vous trouverez plus de détails à ce sujet sur Camel. En juin, la SMC a aussi conclu une entente avec l'AMS en vue de la publication d'une collection conjointe intitulée Tracts in Mathematics, sous la direction de Ken Davidson et de Cam Stewart. Dans un autre ordre d'idées, le BCM et le JCM seront logés ailleurs sous peu.

Enfin, j'aimerais vous rappeler que la Réunion d'hiver 2000 de la SMC se déroulera sous l'égide de l'Université de la Colombie-Britannique, au centre-ville de Vancouver (www.cms.math.ca/-Events/summer00/). Le programme semble très prometteur, et il ne fait nul doute que cette Réunion clôturera en beauté les activités de la SMC dans le cadre de l'année internationale des mathématiques.

-jets comme les limites et les aires, et même d'inventer des histoires pour illustrer des problèmes sous forme d'énoncés. Cependant, la plupart d'entre nous devons enseigner à des classes à sections multiples et nous aligner sur ce que font les autres professeurs pour couvrir (ou ne pas couvrir) la matière au programme dans le laps de temps alloué; il n'y a aucune place pour l'innovation."

Les professeurs de calcul vont des vétérans en habit et cravate, qui s'en tiennent aux méthodes d'enseignement traditionnelles et écrivent toujours au tableau, aux néophytes en jeans et en T-shirt, cellulaire à la ceinture, qui utilisent des rétroprojecteurs, des traceurs de graphes, et même des présentations PowerPoint à partir de leur ordinateur portatif. Bon nombre de professeurs ont d'abord utilisé le Web pour afficher et recevoir les travaux d'étudiants, puis le courriel pour communiquer avec leurs étudiants.

On se demande maintenant de quelle manière nous pouvons utiliser efficacement la technologie en classe. J'invite les lecteurs à nous faire parvenir leur opinion sur la question sous forme de lettre à la rédaction ou d'article.

Letters to the Editors/Lettres aux Rédacteurs

The Editors of the *Notes* welcome letters in English or French on any subject of mathematical interest but reserve the right to condense them. Those accepted for publication will appear in the language of submission. Readers may reach us at `notes-letters@cms.math.ca` or at the CMS Executive Office.

Les rédacteurs des *Notes* acceptent les lettres en français ou en anglais portant sur un sujet d'intérêt mathématique, mais ils se réservent le droit de les comprimer. Les lettres acceptées paraîtront dans la langue dans laquelle elles nous sont parvenues. Les lecteurs pourront nous joindre au bureau administratif de la SMC ou à l'adresse suivante: `notes-lettres@smc.math.ca`.

CMS Winter Meeting 2000
Hotel Vancouver
Vancouver, British Columbia
December 10 - 12, 2000

First Announcement

On behalf of the University of British Columbia, the Department of Mathematics extends a warm invitation to participate in the Winter 2000 Meeting of the Canadian Mathematical Society (CMS).

Following the usual format, the meeting will include ten symposia, contributed papers, seven plenary speakers, as well as Coxeter-James and Doctoral Prize lectures. There will be a public lecture, in conjunction with the Vancouver Institute, the Saturday evening preceding the meeting. Another unusual feature of the meeting will be the premiere production of the play "Hypatia's Street Theatre," a drama based on historical and mathematical themes.

The Public Lecture and the play will be presented on the campus of the University of British Columbia. All other activities of the meeting will be in the Hotel Vancouver, conveniently located in downtown Vancouver, at 900 W. Georgia Street. The Hotel Vancouver can be reached by taxi or bus from Vancouver International Airport in less than 30 minutes.

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

http://www.cms.math.ca/Events/winter00

Meeting registration forms and hotel accommodation forms are published in the September 2000 issue of the *CMS Notes* and is also available on the website, along with on-line forms for registration and submission of abstracts.

Public Lecture

Saturday, December 9, 8:15 p.m.
Co-sponsored by the Vancouver Institute
at Instructional Resources Centre, UBC
Roger Howe, Yale University
Chinese excellence in mathematics teaching: can we match it in North America?

Before the public lecture, there will be a welcoming reception at the Hotel Vancouver from 5:30 to 7pm, Dec. 9, with a bus service at 7pm from the Hotel to the UBC Campus.

Education Session

A special session of the education symposium will be held on Sunday, December 10, with local math teachers invited to participate. Included will be a plenary lecture, by Roger Howe, invited papers, and a panel discussion on the subject of *Mathematics Education East and West*. This will center on issues raised in Liping Ma's book *Knowing and Teaching Mathematics*. This book was recently reviewed in the *CMS Notes* by Ed Barbeau and the *AMS Notices* by Roger Howe, who will both be in attendance, as will Liping Ma.

Hypatia's Street Theatre

This theatrical presentation, written by Klaus Hoechsmann and Ted Galay, will be held at 8:00 pm on December 10 at the Frederic Wood Theatre, on the UBC Campus. A bus service from the Hotel Vancouver to the Theatre will be available. Tickets will be complimentary to registrants.

Plenary Speakers

Patrick Dehornoy (Caen)
Richard Durrett (Cornell)
Roger Howe (Yale) - Education plenary
Izabella Laba (UBC)
Stanley Pliska (UI Chicago)
Paul Roberts (Utah)
Peter Sarnak (Princeton) - Lecture cosponsored by Royal Society and PIMS.

Prize Lectures

The **CMS Coxeter-James Lecture** will be given by **Damien Roy**, University of Ottawa.
The **CMS Doctoral Prize** lecture will be given by **Steven Astels**, University of Georgia.
The **Adrien Pouliot Award**, in recognition of contributions to mathematical education and popularization, will be presented to **Bernard Courteau**, Université de Sherbrooke, at the banquet.

Symposia

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

Algebraic Geometry
(Org: **Peter Russell**, McGill University)

T. Asanuma (Toyama, Japan), A. Broer (Montreal), S.D. Cutkosky (Missouri), Daniel Daigle (Ottawa), G. Freudenburg (Southern Illinois), Anthony Geramita (Queens), E. Goren (McGill), S. Kaliman (Miami), F-V. Kuhlmann (Saskatchewan), K. Masuda (HimejiTech, Japan), M. Miyanishi (Osaka, Japan) Z. Reichstein (Oregon), Peter Russell (McGill), A. Sathaye (Kentucky), J. Wlodarczyk (Warsaw), D. Wright (Washington).

Classical and Computational Analysis
(Org: **Peter Borwein**, Simon Fraser University)

Francois Bergeron (UQAM), Tom Bloom (Toronto), Jon Borwein (SFU), Len Bos (Calgary), Jacque Carette (Maple), Rob Corless (Western Ontario), Tamas Erdelyi (Texas A&M), Mark Geisbrect (Western Ontario), Adrian Lewis (Waterloo), Igor Pritzker (Oklahoma State), Tomas Ransford (Laval).

Financial Mathematics
(Org: **Abel Cadenillas**, University of Alberta)

Jerome Detemple (Boston), Daniel Dufresne (Montreal), (*) Ulrich Haussmann (UBC), Michael Taksar (Stony Brook), Fernando Zapatero (USC).
(*) unconfirmed

History of Mathematics
(Org: **Len Berggren**, Simon Fraser University)
In collaboration with the Canadian Society for History and Philosophy of Mathematics

Speakers to be announced.

Mathematical Education
(Org: **George Bluman** and **Klaus Hoechsmann**, University of British Columbia)

Ed Barbeau (Toronto), Liping Ma (Stanford), Kanwal Neel (Pres. BCAMT), Cynthia Nicol (UBC), Sergei Novecelskii (UBC), Ravi Vakil (MIT).

Number Theory
(Org: **Rajiv Gupta** and **Nike Vatsal**, University of British Columbia)

Michael Bennett (Illinois), David Boyd (UBC), Henri Darmon (McGill), John Friedlander (Toronto), Eyal Goren (McGill), Kumar Murty (Toronto), Ram Murty (Queen's), Ken Ono (Wisconsin), Christopher Skinner (IAS), Cameron Stewart (Waterloo), Siman Wong (Amherst).

Operator Algebras
(Org: **Michael Lamoureux**, University of Calgary and **Ian Putnam**, University of Victoria)

Berndt Brenken (Calgary), Ken Davidson (Waterloo), Juliana Erlijman (Regina), Douglas R. Farenick (Regina), Dan Kucerovsky (New Brunswick), Huaxin Lin (Oregon), Laurent Marcoux (Alberta), James Mingo (Queens), Alexandru Nica (Waterloo), N. Christopher Phillips (Oregon), Christian Skau (Norwegian Univ of Science & Tech), Sam Walters (Northern British Columbia).

Ordered Groups
(Org: **Akbar Rhemtulla**, University of Alberta)

Patrick Dehornoy (Caen), Akbar Rhemtulla (Alberta), Dale Rolfsen (UBC), Bert Wiest (UBC-PIMS PDF).

Partial Differential Equations
(Org: **Richard Froese**, **Nassif Ghoussoub** and **Izabella Laba**, University of British Columbia)

(*) Michael Goldstein (Toronto), Changfeng Gui (UBC), (*) Ira Herbst (Virginia), Dirk Hundertmark (Caltech), Reinhard Illner (Victoria), Alex Iosevich (Columbia-Missouri), Vojkan Jaksic (Ottawa), Rafe Mazzeo (Stanford), Peter Perry (Kentucky), Daniel Pollack (Washington), Hart Smith (Washington), Catherine Sulem (Toronto), Gunther Uhlmann (Washington), Andras Vasy (MIT), Man-Wah Wong (York).

(*) unconfirmed

Probability and its Applications
(Org: **Martin Barlow** (UBC), **Rick Durrett** (Cornell University), **Claudia Neuhauser** (Minnesota), and **Edwin Perkins** (UBC))

Peter Calabrese (Cornell), Ted Cox (Syracuse), Joe Felsenstein (Washington), Steve Krone (Idaho), Claudia Neuhauser (Minnesota).

Contributed Papers Session
(Org: **Kee Lam**, University of British Columbia)

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 **October 15, 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-winter00@cms.math.ca.

Social Events

A **welcoming reception** will be held Saturday, December 9, from 5:30 p.m. to 7:00 p.m. at the Hotel Vancouver, to welcome delegates and gather for the bus to UBC, leaving at 7:00 p.m. for the **Public Lecture**. There will also be a small reception after the lecture.

The **Delegates' Luncheon** will be held on Sunday, December 10, from 12:00 to 2:00 p.m. at the Hotel Vancouver. A ticket to this luncheon is included in all registration fee categories.

Everyone is also invited to a **reception** on Sunday, December 10, from 5:30 to 7:00 p.m. at the Hotel Vancouver, preceeding the presentation of **Hypatia's Street Theatre** at UBC. Bus service will be provided to and from this event.

A **banquet** will be held on Monday, December 11, from 7:30 p.m. at the Hotel Vancouver, preceded by a cash bar at 6:30 p.m. Tickets to this event are available at $50.00 each.

Coffee and juice will be available during the scheduled breaks.

Business Meetings

The CMS will be holding business meetings during the course of the meeting. Additional information will be provided in later announcements and may be found on the Society's website.

The CMS Executive Committee Meeting will meet on Friday, December 8 from 6:00 to 9:00 p.m. The location is still to be confirmed.

The CMS Development Group Luncheon will be held from 11:00 a.m. to 1:00 p.m. on Saturday, December 9 in the Boardroom of the Hotel Vancouver.

The CMS Board of Directors meeting will be held from 1:30 to 6:30 p.m. on Saturday, December 9 in the Tweedsmuir Room of the Hotel Vancouver.

There is no CMS General Meeting scheduled for this meeting.

Exhibits

Exhibits will be open during specified hours during the conference.

Submission of Abstracts

Abstracts for all talks will be published in the meeting programme and will also be available at *http://cms.math.ca/CMS/Events/winter00*.

Abstracts may be sent electronically, following instructions given below. Electronic submission of abstracts is preferred. If this is not possible, abstracts may also be prepared on the standard form available from the CMS Executive Office, 577 King Edward, Suite 109, Ottawa, Ontario CANADA K1N 6N5.

Speakers are asked to submit their abstracts as soon as possible. The deadline for submission of abstracts has been set at **by October 15, 2000**. The organizers appreciate the cooperation of all the speakers in observing this important deadline.

Electronic submission of abstracts: To submit your abstract, please go to the forms section of the meeting website: *http://cms.math.ca/CMS/Events/winter00*.

Alternatively, files including the session, speaker's name, affiliation, complete address, title of talk, and abstracts may be sent to
abstracts@cms.math.ca (speakers), or
cp-abstracts@cms.math.ca (contributed papers).

Please make sure to include the session name in your subject line.

Important deadline for submission of abstracts: October 15, 2000.

Registration

Registration forms will appear in the **September 2000** issue of the *CMS Notes* and are also available from:

CMS Winter 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://cms.math.ca/CMS/Events/winter00
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 October 15 in order to qualify for reduced rates**.

	Before Oct 15	After Oct 15
Plenary speakers/prize lecturers	$ 0	$ 0
Session speakers	200	200
Organizers	135	135
Non-members	400	520
CMS/AMS/MAA/CSHPM members with grants	270	350
CMS/AMS/MAA/CSHPM members without grants	135	175
One-day fee	135	175
Postdocs, retired	100	130
Students, unemployed	50	50
Banquet (free for plenary/prize speakers)	50	50

CMS = Canadian Mathematical Society
AMS = American Mathematical Society
MAA = Mathematical Association of America
CSHPM = Canadian Society for History and
          Philosophy of Mathematics

Refund Policy

Delegates wishing to cancel their registration must notify the CMS Executive Office **in writing before December 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 **November 7, 2000**. Reservations not made by that date will be on a request only, space available basis. Rates quoted are in Canadian dollars.

Reservation Deadline: November 7, 2000

Hotel Vancouver
900 West Georgia Street,
Vancouver, BC V6C 2W6
Check-in: 16:00; Check-out: 12:00 noon
Applicable taxes: GST (7%), PST (10%)
Group Code: NJ-112
Phone: 604-684-3131
toll-free: 800-441-1414
FAX: 604-662-1929
email: hotelvancouver@fairmont.com
website: www.fairmont.com
  Rates: $120, Canadian Pacific, single/double occupancy
           $150, Canadian Deluxe, single/double occupancy
           $210, Entrée Gold, single/double occupancy
           $25 for third person
           (children 18 yrs old and under sharing parents'
           accommodation are complimentary)

Robsonstrasse Hotel
1394 Robson Street,
Vancouver, BC V6E 1C5
Check-in: 11:00 a.m.; Check-out: 11:30 a.m.
Applicable taxes: GST (7%), hotel tax (10%)
Phone: 604-687-1674
Toll-free: 888-667-8877
FAX: 604-685-7808
email: info@robsonstrassehotel.com
website: http://www.robsonstrassehotel.com
  Rates: $85, standard room, single/double occupancy
           $105, deluxe Superior studio, single/double occupancy
           $15, for each additional person
           (please contact the hotel for other options)

YMCA
955 Burrard Street,
Vancouver, BC V6Z 1Y2
Check-in: 2:00 pm; Check-out: 12:00 noon
Applicable taxes: hotel tax (10%)
Group Code: 30210
Phone: 604-681-0221
Toll-free (North America): 888-595-9622
FAX: 604-681-1630
email: vancouver.hotel@vanymca.org
website: http://www.ymca.vancouver.bc.ca
  Rates: $39 single occupancy, no television
           $41 single occupancy, with television
           $8 extra cot, per night
           (rooms do not have private baths)
           (this is a co-ed facility)

In all cases, delegates must make their own reservations. The conference rate is extended up to two days pre- and post-convention. Where applicable, and in order for your room to be applied against our block, please quote the group code.

Accommodation reservations and cancellations: For the **Hotel Vancouver**, all reservations must be guaranteed for the first night's accommodation with cheque, money order or valid major credit card number and must be received prior to the cut-off date of November 7, 2000. Reservations not protected by such guarantee will be released. Such guaranteed reservations are held for arrival until 12:00 noon on the day following the first night reserved. Deposits are refundable if notice of cancellation is received by Hotel Vancouver at least 48 hours prior to the date of arrival. Delegates should note and retain the cancellation number quoted to them by the Reservation Agent at the time the cancellation is made.

For the **Robsonstrasse Hotel**, all reservations must be guaranteed with valid major credit card. Guaranteed reservations will be held until 11:00 a.m. on the day following the first night reserved. Deposits are refundable if notice of cancellation is received at least 48 hours prior to the date of arrival.

For the **YMCA**, reservations will be held until 14:00 on the arrival day only, unless you provide a deposit for one night. Deposits are refundable if notice of cancellation is received by the YMCA at least 48 hours prior to the date of arrival.

Child Care

Child care will be provided if there is sufficient demand. Please contact the organizer Dale Rolfsen (rolfsen@math.ubc.ca) for details. Also, additional information regarding child care options will be posted to the website as it becomes available.

Travel

The City of Vancouver: Detailed information regarding the City of Vancouver, including Tourism Information, local weather and climate, airport shuttle information, site and street maps are available at the website: http://www.tourismvancouver.com

Parking: Delegates staying at the Hotel Vancouver may park for $19.00 per night, with in and out privileges.

For those staying at the Robsonstrasse Hotel, free covered parking is available.

Delegates staying at the YMCA may park in the YMCA parking lots overnight from 9:00 p.m. to 10:00 a.m. for $3.00.

24 hour parking is $7.00. The upper level lot behind the Baptist Church may be used Monday to Saturday, not on Sundays. Sunday parking is restricted to the underground lot only.

Acknowledgements

Support from the following is gratefully acknowledged:
- University of Alberta
- University of British Columbia
- University of Calgary
- MITACS - Mathematics of Information Technology and Complex Systems
- The National Programme Committee (a joint funding body of the Centre de recherches mathématiques, The Fields Institute for Research in Mathematical Sciences, and The Pacific Institute for the Mathematical Sciences)
- PIMS - Pacific Institute for the Mathematical Sciences
- The Royal Society of Canada
- Simon Fraser University
- The Vancouver Institute

The Canadian Mathematical Society would like to acknowledge the contribution of the members of the Meeting Committee for organizing this meeting.

Meeting Committee

Programme *Meeting Director:* Dale Rolfsen (UBC)
Martin Barlow (UBC), Len Berggren (SFU), George Bluman (UBC), Peter Borwein (SFU), Abel Cadenillas (Alberta), Rick Durrett (Cornell), Richard Froese (UBC), Nassif Ghoussoub (UBC), Rajiv Gupta (UBC), Klaus Hoechsmann (UBC), Izabella Laba (UBC), Kee Lam (UBC), Michael Lamoureux (Calgary), Claudia Neuhauser (Minnesota), Edwin Perkins (UBC), Ian Putnam (Victoria), Akbar Rhemtulla (Alberta), Peter Russell (McGill), Nike Vatsal (UBC), Graham Wright (CMS ex-officio).

Local Arrangements *Chair:* Afton Cayford (UBC)
Monique Bouchard (CMS ex-officio), John Fournier (UBC).

Réunion d'hiver de la SMC
Hotel Vancouver
Vancouver (C.B.)
10-12 décembre 2000

Première Annonce

Au nom de l'Université de la Colombie-Britannique (UCB), le département de mathématiques invitee cordialement tous les participants à la Réunion d'hiver 2000 de la Société mathématique du Canada.

Conformément au format habituel, la Réunion comprendra dix symposiums, des communications libres, sept conférences principales ainsi que les conférences des lauréats du prix Coxeter-James et du Prix de doctorat. Une conférence publique, organisée en collaboration avec le Vancouver Institute, sera de plus au programme le samedi soir précédant la Réunion. Autre activité hors de l'ordinaire pour nos Réunions : la première représentation d'une pièce intitulée «Hypatia's Street Theatre», une pièce basée sur des thèmes historiques et mathématiques.

Ceci est une réunion conjointe avec la Société canadienne d'histoire et de philosophie des mathématiques et comprend un symposium sur l'histoire des mathématiques.

La conférence publique et la pièce seront présentées sur le campus de l'Université de la Colombie-Britannique. Toutes les autres activités au programme de la Réunion de dérouleront à l'Hôtel Vancouver, situé au centre-ville de Vancouver, au 900, rue Georgia Ouest. On peut se rendre à l'hôtel en taxi ou en autobus à partir de l'aéroport international de Vancouver en moins de 30 minutes.

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/winter00

Vous trouverez les formulaires d'inscription et de réservation d'hôtel dans le numéro de septembre 2000 des *Notes de la SMC*. Ils seront aussi publiés sur notre site Web.

Conférence publique

Le samedi 9 décembre, 10 h15
Avec la participation du Vancouver Institute,
Instructional Resources Centre, UBC
Roger Howe, Université Yale
Chinese excellence in mathematics teaching: can we match it in North America?

Séance sur l'enseignement

Une séance spéciale du symposium sur l'enseignement aura lieu le dimanche 10 décembre; les professeurs de mathématiques locaux sont invités à y participer. Elle comprendra une conférence donnée par Roger Howe, des communications libres, une discussion entre experts sur le thème *L'enseignement des mathématiques dans l'Est et dans l'Ouest*. On y abordera notamment les questions soulevées par Liping Ma dans son livre *Knowing and Teaching Mathematics*. Cet ouvrage a récemment fait l'objet d'une critique dans les *Notes de la SMC* par Ed Barbeau, et dans les *AMS Notices* par Roger Howe, qui seront tous deux présents, aux côtés de Liping Ma.

Hypatia's Street Theatre

Cette pièce, écrite par Klaus Hoechsmann et Ted Galay, sera présentée à 20 h le 10 décembre au Frederic Wood Theatre, sur le campus de l'Université de la Colombie-Britannique. Il y aura un service de navette entre l'Hôtel Vancouver et le théâtre. Les billets sont offerts à toutes les personnes inscrites à la Réunion.

Conférenciers principaux

Patrick Dehornoy (Caen)
Richard Durrett (Cornell)
Roger Howe (Yale) - Séance sur l'enseignement
Izabella Laba (UBC)
Stanley Pliska (UI Chicago)
Paul Roberts (Utah)
Peter Sarnak (Princeton) - Conférence commanditée conjointement par la Société royale et l'Institut Pacific

Conférences des lauréats

La **Conférence Coxeter-James de la SMC** sera donnée par **C. Damien Roy**, de l'Université d'Ottawa
Le **Prix de doctorat** sera présenté à **Steven Astels**, de l'Université de Georgie.
Bernard Courteau (Université de Sherbrooke) est le lauréat 2000 du **Prix Adrien-Pouliot**.

Symposiums

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

Géométrie algébrique
(Org: **Peter Russell**, Université McGill)

T. Asanuma (Toyama, Japan), A. Broer (Montreal), S.D. Cutkosky (Missouri), Daniel Daigle (Ottawa), G. Freudenburg (Southern Illinois), Anthony Geramita (Queens), E. Goren (McGill), S. Kaliman (Miami), F-V. Kuhlmann (Saskatchewan), K. Masuda (HimejiTech, Japan), M. Miyanishi (Osaka, Japan) Z. Reichstein (Oregon), Peter Russell (McGill), A. Sathaye (Kentucky), J. Wlodarczyk (Warsaw), D. Wright (Washington).

Analyse classique et quantative
(Org: **Peter Borwein**, Université Simon Fraser)

Francois Bergeron (UQAM), Tom Bloom (Toronto), Jon Borwein (SFU), Len Bos (Calgary), Jacque Carette (Maple), Rob Corless (Western Ontario), Tamas Erdelyi (Texas A&M), Mark Geisbrect (Western Ontario), Adrian Lewis (Waterloo), Igor Pritzker (Oklahoma State), Tomas Ransford (Laval).

Mathématiques financières
(Org: **Abel Cadenillas**, Université de l'Alberta)

Jerome Detemple (Boston), Daniel Dufresne (Montreal), (*) Ulrich Haussmann (UBC), Michael Taksar (Stony Brook), Fernando Zapatero (USC).
(*) à confirmer

L'histoire des mathématiques
(Org: **Len Berggren**, Université Simon Fraser)
Avec la participation de la Société canadienne d'histoire et de philosophie des mathématiques

Liste de conférenciers à venir.

Enseignement des mathématiques
(Org: **George Bluman** et **Klaus Hoechsmann**, Université de la Colombie-Britannique)

Ed Barbeau (Toronto), Liping Ma (Stanford), Kanwal Neel (Pres. BCAMT), Cynthia Nicol (UBC), Sergei Novecelskii (UBC), Ravi Vakil (MIT).

Théorie des nombres
(Org: **Rajiv Gupta** et **Nike Vatsal**, Université de la Colombie-Britannique)

Michael Bennett (Illinois), David Boyd (UBC), Henri Darmon (McGill), John Friedlander (Toronto), Eyal Goren (McGill), Kumar Murty (Toronto), Ram Murty (Queen's), Ken Ono (Wisconsin), Christopher Skinner (IAS), Cameron Stewart (Waterloo), Siman Wong (Amherst).

Algèbres des opérateurs
(Org: **Michael Lamoureux**, Université de Calgary et **Ian Putnam**, Université de Victoria)

Berndt Brenken (Calgary), Ken Davidson (Waterloo), Juliana Erlijman (Regina), Douglas R. Farenick (Regina), Dan Kucerovsky (New Brunswick), Huaxin Lin (Oregon), Laurent Marcoux (Alberta), James Mingo (Queens), Alexandru Nica (Waterloo), N. Christopher Phillips (Oregon), Christian Skau (Norwegian Univ of Science & Tech), Sam Walters (Northern British Columbia).

Groupes ordonnés
(Org: **Akbar Rhemtulla**, Université de Alberta)

Patrick Dehornoy (Caen), Akbar Rhemtulla (Alberta), Dale Rolfsen (UBC), Bert Wiest (UBC-PIMS PDF).

Équations aux dérivées partielles
(Org: **Richard Froese**, **Nassif Ghoussoub** et **Izabella Laba**, Université de la Colombie-Britannique)

(*) Michael Goldstein (Toronto), Changfeng Gui (UBC), (*) Ira Herbst (Virginia), Dirk Hundertmark (Caltech), Reinhard Illner (Victoria), Alex Iosevich (Columbia-Missouri), Vojkan Jaksic (Ottawa), Rafe Mazzeo (Stanford), Peter Perry (Kentucky), Daniel Pollack (Washington), Hart Smith (Washington), Catherine Sulem (Toronto), Gunther Uhlmann (Washington), Andras Vasy (MIT), Man-Wah Wong (York). (*) à confirmer.

Théorie des probabilités et leurs applications
(Org: **Martin Barlow** (UBC), **Rick Durrett** (Cornell University), **Claudia Neuhauser** (Université de Minnesota), et **Edwin Perkins** (UBC)

Peter Calabrese (Cornell), Ted Cox (Syracuse), Joe Felsenstein (Washington), Steve Krone (Idaho), Claudia Neuhauser (Minnesota).

Communications libres
(Org: **Kee Lam**, Université de la Colombie-Britannique)

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 15 octobre 2000**. Nous demandons à chacun de joindre au résumé le formulaire et le règlement des frais 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 : gradtravel-winter00@cms.math.ca.

Activités sociales

Une **réception** aura lieu le samedi 9 décembre, de 17 h 30 à 19 h, à l'Hôtel Vancouver. Nous en profiterons pour souhaiter la bienvenue aux participants et nous rassembler en vue du départ pour l'Université de la Colombie-Britannique, où aura lieu la **Conférence publique** (l'autobus part à 19 h). Il y aura également une petite réception après la conférence.

Le **lunch des participants** se tiendra le dimanche 10 décembre, de midi à 14 h, à l'Hôtel Vancouver. Ce repas est compris dans toutes les catégories d'inscription.

Tous les participants sont aussi invités à une **réception** le dimanche 10 décembre, de 17 h 30 à 19 h, à l'Hôtel Vancouver, avant la représentation de la pièce **Hypatia's Street Theatre** à l'Université de la Colombie-Britannique. Un service de navette est offert pour se rendre à cette activité et en revenir.

Un **banquet** aura lieu le lundi 11 décembre, à compter de 19 h 30, à l'Hôtel Vancouver. Il y aura un service de bar payant à partir de 18 h 30. On peut se procurer des billets pour cette activité au coût de 50 $ chacun.

Du café et des jus seront servis pendant les pauses.

Séances de travail

La SMC organisera des réunions à l'occasion de la Réunion d'hiver. De plus amples renseignements seront fournis dans les prochaines annonces ou sur les sites Web de ces sociétés.

Le Comité exécutif de la SMC tiendra une réunion le vendredi 8 décembre de 18 h à 21 h (lieu à confirmer).

Le lunch du Groupe de développement de la SMC aura lieu de 11 h à 13 h le samedi 9 décembre au «Boardroom» de l'Hotel Vancouver.

La réunion du Conseil d'administration de la SMC aura lieu de 13 h 30 à 18 h 30 à la salle Tweedsmuir de l'Hotel Vancouver.

Il n'y aura pas d'assemblée générale de la SMC pendant cette Réunion.

Expositions

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

Envoi des résumés

Tous les résumés paraîtront dans le programme de la Réunion et seront aussi accessibles à partir du site Web : *http://smc.math.ca/CMS/Events/winter00*.

Les participants peuvent envoyer leur résumé sous forme électronique en suivant les instructions ci-dessous. Il est préférable de remettre les résumés par voie électronique, mais si ce n'est pas possible, vous pouvez utiliser le formulaire standard que vous pourrez vous procurer au Bureau administratif de la SMC, 577, avenue King-Edward, bureau 109, Ottawa (Ontario) Canada K1N 6N5.

Les conférenciers sont priés de remettre leur résumé le plus tôt possible. La date limite est fixée au **15 octobre 2000**. Les organisateurs remercient les conférenciers de bien vouloir respecter cette importante échéance.

Envoi des résumés par courriel :
Pour envoyer votre résumé, rendez-vous à la sections des formulaires du site Web de la Réunion : *http://cms.math.ca/CMS/Events/winter00*.

Vous pouvez aussi nous faire parvenir un fichier comprenant le nom de la séance, le nom du conférencier, son affiliation, son adresse complète, le titre de la conférence et le résumé à l'une des adresses suivantes :
`resumes@smc.math.ca` (conférenciers invités), ou `cl-resumes@smc.math.ca` (communications libres).

N'oubliez pas de préciser le nom de la séance dans le sujet de votre message.

Important : La date limite de remise des résumés est le 15 octobre 2000.

Inscription

Un formulaire d'inscription paraîtra dans le numéro de **septembre 2000**. On peut également se le procurer auprès de la SMC :

Réunion d'hiver 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://smc.math.ca/CMS/Events/winter00
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 octobre pour que vous ayez droit aux tarifs réduits.

	Avant le 15 oct	Après le 15 oct
Conférenciers principaux ou primés	$ 0	$ 0
Conférenciers	200	200
Organisateurs	135	135
Non-membres	400	520
Membres SMC/AMS/MAA/SCHPM avec subvention	270	350
Membres SMC/AMS/MAA/SCHPM sans subvention	135	175
Frais d'une journée	135	175
Postdocs, retraités	100	130
Étudiants, sans-emploi	50	50
Banquet (gratuits pour principaux/primés)	50	50

SMC = Société mathématique du Canada
AMS = American Mathematical Society
MAA = Mathematical Association of America
SCHPM = Société canadienne d'histoire et de
              philosophie des mathématiques

Politique de remboursement

Les participants qui désirent annuler leur inscription doivent en aviser le bureau administratif de la SMC **par écrit avant le 1er décembre** 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 **7 novembre 2000**. Après cette date, les hôtels ne prendront vos réservations que s'il reste des chambres. Les tarifs sont indiqués en devises canadiennes.

Réserver au plus tard le 7 novembre 2000

Hotel Vancouver
900 West Georgia Street,
Vancouver, BC V6C 2W6
Arrivée : 16:00; départ : 12:00
Taxes applicables: TPS (7%), taxe d'hébergement (10%)
Code de groupe: NJ-112
Téléphone: 604-684-3131
sans-frais: 800-441-1414
FAX: 604-662-1929
courriel: hotelvancouver@fairmont.com
site web: www.fairmont.com
   Tarifs: $120, Canadian Pacific, 1 ou 2 personnes
               $150, Canadian Deluxe, 1 ou 2 personnes
               $210, Entrée Gold, 1 ou 2 personnes
               25$ supplémentaire pour troisième personne
               (gratuit pour les enfants de moins de 18 ans
               qui partagent la chambre de leurs parents)

Robsonstrasse Hotel
1394 Robson Street,
Vancouver, BC V6E 1C5
Arrivée : 11:00; départ : 11:30
Taxes applicables: TPS (7%), taxe d'hébergement (10%)
Téléphone: 604-687-1674
sans-frais: 888-667-8877
FAX: 604-685-7808
courriel: info@robsonstrassehotel.com
site web: http://www.robsonstrassehotel.com
   Tarifs: $85, chambre standard, 1 ou 2 personnes
               $105, studio Superieur deluxe, 1 ou 2 personnes
               $15, supplémentaire pour chaque personne additionelle
               (veuillez communiquer avec l'hotel pour autres options)

YMCA
955 Burrard Street,
Vancouver, BC V6Z 1Y2
Arrivée : 14:00 ; départ : 12:00
Taxes applicables: taxe d'hébergement (10%)
Code de groupe: 30210
Téléphone: 604-681-0221
sans-frais (Am du nord): 888-595-9622
FAX: 604-681-1630
courriel: vancouver.hotel@vanymca.org
site web: http://www.ymca.vancouver.bc.ca
   Tarifs: $39 1 personne, sans télévision
               $41 1 personne, avec télévision
               $ 8 lits supplémentaires - par nuit
               (les salles de bain ne sont pas privées)
               (il s'agit d'une résidence mixte)

Vous êtes priés de faire vos propres réservations. Les tarifs préférentiels s'appliquent aussi aux deux jours qui précèdent et qui suivent la Réunion.

S'il y a lieu et pour que votre chambre soit prise dans le groupe de chambres réservées, veuillez donner le code de groupe.

Réservations et annulations: À **l'Hôtel Vancouver**, la première nuit doit être garantie par chèque, mandat poste ou

un numéro de carte de crédit reconnue; le paiement doit être reçu avant le 7 novembre 2000. Les réservations non garanties de l'une de ces manières seront annulées. Les chambres ainsi garanties sont réservées jusqu'à midi le jour suivant la date de la réservation. Les dépôts sont remboursables si la demande d'annulation parvient à l'Hôtel Vancouver au moins 48 heures avant la date d'arrivée prévue. Les participants sont priés de noter et de conserver le numéro d'annulation que leur donne le ou la responsable des réservations au moment de l'annulation.

À **l'Hôtel Robsonstrasse**, la première nuit doit être garantie par un numéro de carte de crédit reconnue. Les chambres ainsi garanties sont réservées jusqu'à 11 h lle jour suivant la date de la réservation. Les dépôts sont remboursables si la réservation est annulée au moins 48 heures avant la date d'arrivée prévue.

Au **YMCA**, les chambres sont réservées jusqu'à 14 h le jour de l'arrivée, à moins que la première nuit ne soit payée à l'avance. Les dépôts sont remboursables si la réservation est annulée au moins 48 heures avant la date d'arrivée prévue.

Services de garde

Des services de garde seront offerts si la demande est suffisante. Veuillez communiquer avec Dale Rolfsen (rolfsen@math.ubc.ca) pour obtenir plus de détails.

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 Vancouver:
Vous trouverez des renseignements détaillés sur la ville de Vancouver (renseignements touristiques, température et climat locaux, navette à provenance et en destination de l'aéroport, cartes de la ville et des attractions touristiques, etc.) sur le site Web suivant : http://www.tourismvancouver.com

Stationnement:
Les participants qui logent à l'Hôtel Vancouver peuvent garer leur voiture au coût de 19 $ la nuit avec droits d'entrée et de sortie.

Ceux qui restent au Robsonstrasse ont accès gratuitement à un stationnement couvert.

Les participants qui logent au YMCA peuvent garer leur véhicule dans le stationnement du YMCA pendant la nuit, de 21 h à 10 h, au coût de 3 $, et pendant 24 heures pour 7 $. Le stationnement situé au niveau supérieur, derrière l'église baptiste, peut aussi servir du lundi au samedi, mais pas le dimanche. Ce jour-là, il faut garer sa voiture dans le stationnement sous-terrain seulement.

Remerciements

Nous remercions les organismes suivant de leur soutien financier :
- l'Université de l'Alberta
- l'Université de la Colombie-Britannique
- l'Université de Calgary
- MITACS - Les mathématiques des technologies de l'information et des sytèmes complexes
- le Comité du Programme Nationale (programme conjoint du Centre de recherches mathématiques, de l'Institut Fields et de l'Institut Pacific)
- PIMS - l'Institut Pacific pour les sciences mathématiques
- Société royale du Canada
- le Vancouver Institute

La Société mathématique du Canada tient 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 : Dale Rolfsen (UBC)
Martin Barlow (UBC), Len Berggren (SFU), George Bluman (UBC), Peter Borwein (SFU), Abel Cadenillas (Alberta), Rick Durrett (Cornell), Richard Froese (UBC), Nassif Ghoussoub (UBC), Rajiv Gupta (UBC), Klaus Hoechsmann (UBC), Izabella Laba (UBC), Kee Lam (UBC), Michael Lamoureux (Calgary), Claudia Neuhauser (Minnesota), Edwin Perkins (UBC), Ian Putnam (Victoria), Akbar Rhemtulla (Alberta), Peter Russell (McGill), Nike Vatsal (UBC), Graham Wright (SMC, d'office).

Logistique
Président du comité local : Afton Cayford (UBC)
Monique Bouchard (SMC, d'office), John Fournier (UBC).

REGISTRATION FORM - CMS WINTER MEETING 2000
December 10-12, 2000 - Hotel Vancouver, Vancouver, B.C.

Deadlines: Preregistration for reduced rates   payment by October 15
Arrival of payments to be processed before the meeting   December 1
Cancellation (refund less $40 penalty)   December 1

LASTNAME: FIRSTNAME: CMS ID #	
Institution (for badge):	
Mailing Address: □ home – □ office	Voluntary Information: □ Male □ Female
Telephone: Email:	
Arrival date: Departure date:	

PLEASE MAKE YOUR HOTEL RESERVATIONS DIRECTLY WITH THE HOTEL.   **DEADLINE : NOV 7**

Where will you be staying?   □ Hotel Vancouver   □ Robsonstrasse   □ YMCA   □ No housing required

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.   **DEADLINE (ABSTRACT & REGISTRATION) : OCT 15**

My abstract: □ is enclosed   □ will follow   □ sent via website or email   **DEADLINE : OCT 15**

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

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

PLEASE INDICATE WHICH SPECIAL OR RELATED EVENT(S) YOU MIGHT BE ATTENDING

□ Hypatia's Street Theatre   □ Public Lecture

PLEASE INDICATE WHICH SESSION(S) YOU MIGHT BE ATTENDING

□ Algebraic Geometry   □ Computational Analysis   □ Financial Math   □ History of Math
□ Math Education   □ Number Theory   □ Operator Algebras   □ Ordered Groups
□ Partial Diff. Equations   □ Probability & Applications   □ Contributed Papers

Don't forget to purchase your ticket for the banquet !!
All categories also include a ticket to the Delegates' Luncheon.

Please circle one of the registration categories in the chart below	Before Oct 15	After Oct 15
Plenary Speaker / Prize Lecturer	$ 0	$ 0
Session Speakers (choose this or other category, whichever is less)	200	200
Organizers (choose this or other category, whichever is less)	135	135
Non-members	400	520
CMS/AMS/MAA/CSHPM members with grants	270	350
CMS/AMS/MAA/CSHPM members without grants	135	175
One-day fee	135	175
Postdocs, retired	100	130
Students, unemployed	50	50
Banquet, Monday, December 11 (free for plenary/prize speakers)	50	50

Registration: $	# Banquet = $	TOTAL $	

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

Credit Card #	Expiry:
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:

Send completed form with payment to:

CMS Executive Office, 577 King Edward, POB 450, Station A, Ottawa, ON CANADA K1N 6N5

Phone: 613-562-5702   FAX 613-565-1539 (Please use the FAX # for credit card payments only.)

FORMULAIRE D'INSCRIPTION - HIVER 2000
10-12 décembre 2000 - Hotel Vancouver, Vancouver (C.B.)

Dates importantes:	Préinscription à prix réduit	paiement avant le 15 octobre
	Arrivée de paiement pour compléter inscription avant la réunion	1 décembre
	Annulation - Préinscription (remboursement moins 40$)	1 décembre

NOM: PRÉNOM: No. SMC	
Institution (pour le "badge"):	
Adresse postale: ☐ domicile – ☐ bureau	Information optionnelle: ☐ Homme ☐ Femme
Téléphone: Courier él:	
Date d'arrivée: Date de départ:	

VOUS ÊTES PRIÉS DE FAIRE VOS PROPRES RÉSERVATIONS D'HÔTEL.   **DATE LIMITE : 7 NOV** Veuillez indiquer votre choix d'hôtel ☐ Hotel Vancouver   ☐ Robsonstrasse   ☐ YMCA   ☐ non-requise
☐ 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.   **DATE LIMITE (RÉSUMÉ ET INSCRIPTION) : 15 OCT**
Mon résumé   ☐ est inclus   ☐ suivra   ☐ suivra par site web ou courriel Nous demandons à toute personne désirant présenter une communication   **DATE LIMITE : 15 OCT** de joindre au résumé son formulaire et le règlement de ses frais d'inscription.
Adhésions: ☐ SMC ☐ SCMIA ☐ SCRO ☐ SCHPM ☐ SSC ☐ AMS ☐ MAA ☐ SIAM ☐ AWM
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 ☐ Hypatia's Street Theatre   ☐ Conférence publique
VEUILLEZ INDIQUER À QUELLE(S) SÉANCE(S) VOUS PARTICIPEREZ

☐ Géométrie algèbrique	☐ Analyse classique	☐ Math financières	☐ Histoire des maths
☐ Enseignement des maths	☐ Théorie des nombres	☐ Algèbres opérateurs	☐ Groupes ordonnés
☐ Éq. aux dérivées partielles	☐ Probabilités et appls	☐ Communications libres	

Veuillez encercler la catégorie d'inscription choisie	Avant le 15 oct	Après le 15 oct
N'oubliez pas d'acheter votre billet pour le banquet !! *Un billet pour le lunch des délégués est inclus dans toutes les catégories d'inscription.*		
Conférenciers principaux / conférenciers primés	0 $	0 $
Conférenciers (choisissez cette catégorie ou une autre:montant moins élevé)	200	200
Organisateurs(choisissez cette catégorie ou une autre:montant moins élevé)	135	135
Non-membres	400	520
Membres SMC/AMS/MAA/SCHPM avec subvention	270	350
Membres SMC/AMS/MAA/SCHPM sans subvention	135	175
Frais d'une journée	135	175
Postdocs, retraités	100	130
Étudiants, sans-emploi	50	50
Banquet, lundi 11 décembre (gratuit pour les conférenciers principaux / primés)	50	50

Inscription: $	# 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. Si vous utilisez une autre carte, veuillez inscrire le nom et faire signer le détenteur)	
Lettres moulées:	Signature:

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

OBITUARY / AVIS DE DÉCÈS

**Fritz Rothberger
(1902–2000)**

Professor Fritz Rothberger passed away on May 30, 2000, in his 98th year. Born in Vienna, Austria, Dr. Rothberger attended the Akademisches Gymnasium there, and later was a student at the University of Vienna where he received his Baccalaureate in 1925. In 1927 he received the Doctor of Philosophy degree from that university. In 1981 he received an honorary D.Sc. degree from Acadia University.

Dr. Rothberger's first academic appointment in Canada was at Acadia University from 1943 to 1949. He later went on to the University of New Brunswick (1949-55), Laval (1955-66) and Windsor (1966-1970).

Following his retirement from the University of Windsor in 1970, Dr. Rothberger returned to Acadia and taught mathematics until 1978, and on a part-time basis until 1981. His association with Acadia has continued to the present day as an Honorary Distinguished Professor and Senior Research Fellow.

A turning point in Dr. Rothberger's career came in 1937, when he visited Warsaw, which at that time was the focal point for research in set theory. Here he came into contact with Wladislaw Sierpinski and his associates – Alfred Tarski, Kasimierz Kuratowski, and others. This experience led him to continue and extend his own research in this area, and the outcome was a series of research papers of major importance, known today as "combinatorial set theory." This work was recognized in 1977 when a symposium was held in his honour at the University of Toronto.

Dr. Rothberger was an outstanding teacher with an inimitable style of lecturing. He gave unsparingly of his time and managed to bring the most abstract concepts down to earth. He instilled a love for mathematics in numerous young people and many of his students went on to do graduate work.

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Reminiscences of Fritz Rothberger

Fritz Rothberger grew up in Vienna, where his family owned a well-known clothing store. According to Austrian law, he had to become an apprentice tailor in order to be allowed to take over the store. Having passed the sartorial examinations, he turned his mind to mathematics. He studied this subject both in Vienna and Warsaw, where he came under the influence of Sierpinski. His active mathematical research was in a field that he started; it is known today as "combinatorial set theory." His work is being appreciated only now and a symposium was held in his honour quite recently.

Fritz Rothberger came to England just prior to World War II. There he was soon interned as an enemy alien and ultimately deported to Canada. I met him in an internment camp in New Brunswick in 1940. There he worked as a lumberjack; but the story that he once cut down a telegraph pole by mistake is apocryphal. He also taught advanced mathematics in the camp school, and I took all his courses for about two years. I remember him drawing circles in the sand to illustrate some theorem in analysis. I can safely say that, had it not been for Fritz Rothberger's teaching and friendship at that time, I would never have become a mathematician or entered academia. The one other student I remember from his classes has become a well-known physicist. [Walter Kohn received the Nobel prize in chemistry in 1998.] After his release from the camp, Rothberger had a distinguished academic career in Canada. He first taught at Acadia, then became chairman at Fredericton, spent many years at Laval, then moved to Windsor and again to Acadia. He was an outstanding teacher with an inimitable style of lecturing. He gave unsparingly of his time and managed to bring the most abstract concepts down to earth. He instilled a love for mathematics in numerous young people. Although, to my knowledge, he was never in an official position to supervise doctoral dissertations, many of his students went on to do graduate work, and I know of two Canadian mathematicians who acknowledge owing crucial ideas in their theses to him.

We were good friends for many years. Not only did he drop in in Montreal at least twice a year, until quite recently, but he was a frequent visitor of the Summer Institute in Kingston. Usually he refused financial support and was on a so-called Rothberger fellowship.

I know of no one who made greater contribution to Canadian mathematics than Fritz Rothberger. It is a crying shame that he was never elected to the Royal Society of Canada, but [unfortunately it is] too late to remedy this.

*by J. Lambek, (McGill)
(written in 1980)*

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I first met Fritz Rothberger in 1962. I was a first-year science student at

Laval University and was trying to decide between mathematics and physics. The head of the physics department was rather haughty and told our class they already had too many students. If our average was less than 90 per cent, we shouldn't even consider physics. In contrast, the head of mathematics, Adrien Pouliot, who was a real dynamo and seemed to hover a few inches above the floor, said, "We don't care if you're good or not; if you like mathematics, come. We'll teach you something." After this presentation, he invited anyone who was interested to come back with him to the math department to show us around. There were about 15 of us and, as we arrived, we ran into Rothberger walking in the hall, smoking a cigarette, his head bowed, deep in thought. "Professeur Rothberger! Professeur Rothberger!" said Pouliot, "these young people would like to know what sort of opportunities there are for mathematics graduates." "None!" was the reply, "None!", and he continued on his way. That did it. We all went into mathematics.

I never called him Fritz. He was old (60 years old seems very old when you're 18), respectable and an imposing figure. He was always Professor Rothberger to me, or just Rothberger in the French tradition, when not addressing him. Actually, he pronounced his name in French, to rhyme with Fabergé.

I sometimes studied at the university in the evenings and Rothberger was always there in his office, working. He worked at the blackboard, not so much sitting on a stool as perching on it. I would stop by and ask mathematical questions and he was always ready to help. One of my classmates, a Vietnamese who had done lots of geometry, gave me the following problem: given a circle, construct its centre using only a compass. I worked quite hard on it but made no progress, so I asked Rothberger about it. He said yes, it was possible, but wasn't forthcoming with any

suggestion as to how go about it. Then, one Saturday morning, I found the solution. I was excited and wanted to tell someone but there was no one around. Monday morning, I met Rothberger in the coffee lounge and I told him my solution. Unfortunately, the solution was a bit too complicated to explain in the lounge and I didn't do a very good job of it, and was left frustrated. But on one of the final exams there was a question: "Write one or two pages on any topic in mathematics that interests you." I knew exactly what to write. Later he called me to his office. He liked my construction. "But" he said, "your spelling is terrible."

In September 1966, I got married and went off to Vancouver to study at UBC. We had trouble finding a place to live and eventually got discouraged and took the train back to Québec. It was the middle of September and I had no idea what I was going to do. I went to see Goodspeed, the head of the math department at Laval, for some advice. He told me to phone Rothberger, who had just moved to the University of Windsor. When I reached Rothberger and told him my situation, he said to wait by the phone, he would call back. He phoned back in 15 minutes: "It's all arranged. You're going to McGill. You'll be teaching a calculus course and the first class is tomorrow."

He visited Montréal quite often. (His mother and brother lived there, although I didn't know this then.) On one of these visits, I invited him to dinner at our place and he accepted. We had never had anyone to dinner and we had no idea what to do. My wife went to a fancy butcher shop in Place Ville-Marie and got three big T-bone steaks, which we ate accompanied by boiled potatoes and a glass of water. This was the first of many dinners we had together.

When he went to Acadia, in semi-retirement, I was already at Dalhousie. He used to visit us every week at first

and stay until 3 a.m. He would sit on the floor and smoke cigarettes while I sat on the couch. He smoked Gauloises and, occasionally, he brought exotic cigarettes. He once brought some Egyptian cigarettes, Abdullas I think, which were the same length as ordinary cigarettes but twice the diameter. They smelled terrible; when he left, the air was blue with smoke and all the dictionaries were on the floor.

He liked languages and spoke many (11 is a good estimate). A few years ago, I took up Italian. He had been to Italy before the war and had learned to speak Italian. Of course his background in Latin helped a lot. He brought me a novel, *I Promessi Sposi*, which he said was the best novel ever written. But my Italian was not good enough to read it.

He had a great sense of humour and an honest childlike laugh. I would tell a joke about Catholics and Protestants and he would laugh. And then he would say, "But is it true? I mean, would a Catholic react that way?" He knew more about the Catholic religion than me but most of this knowledge he got from reading Dante in Italian or from medieval paintings, so it may have been a bit out of date. More than once he asked where I heard some joke; he said that he had heard the same one as a boy in Vienna!

He had ideas about how children should be brought up, which he got from Jean-Jacques Rousseau. At the time, Rousseau was on the "index" and it was not permitted to get his books from the library at Laval. He got special permission to check them out. Children should be allowed to grow up in a natural environment without discipline, he claimed. He lived his life according to the same principle, never doing anything he didn't want to do. But he had so many interests that there was always something he wanted to do, from skiing, mountain climbing, horseback riding to reading poetry.

He liked Robert Burns, François Villon and Heinrich Heine. He could quote verses from them which he had learnt 80 years before.

And of course there was mathematics. When he worked on a problem, he was obsessed with it. He always had a pocket full of small pencils and he would ask if I had some paper. Then he would explain what he was working on. In later years, he was working on Burnside's problem. Just before leaving Laval, Kim (the Vietnamese student with the geometry problems) said to him, "You are well-liked by the students but you must admit you don't know any algebra." When Rothberger related this to me, he added, "It's true." At the international congress in Nice, in 1970, he heard a talk on Burnside's problem. This was something he could get his hands on, and he worked on it for the next 20 years. He would call and ask me to send him some paper in a journal here. The next time he came, he would explain what he had understood of it. He never published anything on the problem and I don't know if he got any results at all, but he had high standards when it came to publications. He would have nothing but scorn for a concept like "minimal publishable units."

I learned a lot from him and I've been very fortunate to have known him.

by Robert Paré (Dalhousie)

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My recollections of Fritz Rothberger are from the years 1972-76 when I was an undergraduate at Acadia. He was a fixture in the mathematics department, seemingly always in his office or somewhere between there and the coffee lounge. Fritz was of indeterminate age: he certainly wasn't young but we students weren't really sure how old he was. (In fact, when I saw him twenty

years later, he still looked the same.) With his thick accent, rubbery face, and cigarette perpetually dangling between his fingers, he was quite a figure. To an undergraduate, Fritz took some getting used to: he was outwardly gruff and his courses never seemed to have very many students in them so at first he seemed to be the sort of professor one ought to avoid. But this was not the case.

In my third year, someone recommended that I take Fritz's complex analysis course. This turned out to be one of the most stimulating courses I ever took, undergraduate or graduate. What was remarkable about the course was the economical way in which Fritz was able to convey the material without getting bogged down in unnecessary details. His proofs were often sketches – a general outline inviting us to fill in the gaps. I like to think of it as the "Bauhaus style of teaching:" less is more. Of course, those of us in the class often felt that less was less! It was only when we rewrote our notes, talked about the topics amongst ourselves and looked at references in the library that we realized that Fritz was simply helping us to discover the material on our own.

To a young undergraduate, Fritz was something of an enigma. He was clearly respected by the other mathematicians in the department and he had stories to tell about famous (and not-so-famous) mathematicians he had known in Europe. But was he a good mathematician himself? I'm not sure I knew at the time exactly what constituted a good mathematician or how to recognize one. Nevertheless, I have one vivid memory of Fritz that persuaded me beyond any doubt that he was the real thing.

It occurred after the Putnam exam had been written one year. As was the

custom, those of us who wrote it gathered in the math lounge after the exam for the 'post-mortem.' We had written one of the problems on the blackboard and were discussing it with David Haley, then head of the department and a good problem-solver. Fritz shuffled into the lounge, coffee cup in hand. He paused, looked at the board and said (as only Fritz could), "What is?" We explained and, without uttering a word, Fritz took the chalk and proceeded to sketch out FOUR different solutions to the problem on the board! He then continued on his way leaving a speechless group of math students in his wake.

In winter it was a commonplace occurrence to see Fritz heading out of Huggins Science Hall with his cross-country skis. Acadia's beautiful campus is built on the side of a hill and, although we were never sure where Fritz went, he always headed UP the hill on his skis. Later in the day, we would often see him returning, by taxi, to the science building. Rumour had it that he simply skied as far as he wanted to and then found the nearest house from which he called a cab to bring him back.

Afterwards, Fritz could be seen heading over to the faculty club to prepare his dinner, a bottle of wine wrapped in a brown paper bag tucked under his arm. I'm not sure what the 'locals' thought of this, but to us keen undergrads it was a reminder that we needed to take time out from our studies to relax and "be like Fritz."

In fact, emulating Fritz Rothberger would have been quite difficult – he was too much of an original. Nevertheless I consider myself fortunate to have been one of his students and I feel that I am a better mathematician and teacher for having known him.

by David Poole (Trent)

CALL FOR SESSIONS / APPEL AUX COMMUNICATIONS

Additional self-supported sessions play an important role in the success of the Society's semi-annual meetings. The CMS welcomes and invites proposals for self-supported sessions for Winter 2001 (York University Toronto, Ontario).

Proposals should include a brief description of the focus and purpose of the session, the number and expected length of the talks, as well as the organizer's name, complete address, telephone number, e-mail address, etc. Although such sessions would not usually have a plenary speaker, any special situations are left to the discretion of the Meeting Director.

These additional sessions will be incorporated with the other sessions, time blocks allocated by the Meeting Director and advertised in the *CMS Notes*, on *Camel* and, if possible, in the *Notices of the AMS* and in publications of other societies. Speakers in these additional sessions will be requested to submit abstracts which will be published in the meeting programme.

The following provides information on the sessions confirmed to date.

Those wishing to organize a session should send a proposal to the Meeting Director by the deadlines below.

Les sessions autofinancées contribuent de plus en plus au succès des réunions semi-annuelles de la Société. La SMC encourage ces initiatives et invitent les organisateurs(trices) potentiel(les) à soumettre leurs projets pour ce type de sessions à l'occasion de la réunion d'hiver 2001 (Université York, Toronto, Ontario).

Les projets doivent inclure une brève description du thème et de la motivation de la session, le nombre et la durée des communications prévues, ainsi que le nom et les coordonnées physiques et électroniques de l'organisateur(trice). Ces sessions ne comprennent pas nonseulement de conférence plénière, mais les situations particulières sont laissées à la discrétion du directeur de la réunion.

Ces sessions additionnelles feront partie du programme, leur horaire sera établi par le directeur de la réunion, et elles seront publicisées dans les *Notes de la SMC*, sur *Camel* et, si possible, dans les *Notices de l'AMS* et les publications d'autres sociétés. Les conférenciers devront soumettre un résumé de leur communication, que paraîtra dans le programme de la réunion.

Toute personne désireuse d'organiser une session doit faire parvenir un project au directeur de réunion avant les dates dessous

Winter 2001 / Hiver 2001
Deadline / Date limite: October 15, 2000 - le 15 octobre 2000

Dynamical Systems
Bill Langford (Guelph) and/ et Jianhong Wu (York)
Free Probability
Andu Nica (Waterloo)
Kac-Moody Lie Algebras
Yun Gao (York) and Nantel Bergeron (York)
Non-linear Analysis
Robert McCann (Toronto)

Tom Salisbury, Meeting Director
Department of Mathematics and Statistics
York University
N520 Ross, 4700 Keele Street
Toronto, Ontario Canada M3J 1P3
Tel: (416) 736-5250 Fax: (416) 736-5757
e-mail: salt@pascal.math.yorku.ca

CMS 1999 TREASURER'S REPORT

Editorial Note: For other 1999 committee reports, please see the May 2000 issue of the CMS Notes.

Arthur Sherk (Toronto)

Generally speaking, the financial year 1999 can be considered to be satisfactory. Income kept up reasonably well, and most expense items came in on or below budget.

The Operations Fund, consisting of the four general divisions: General, Education, Research, and Publishing, showed an excess of revenue over expenses of about $51,000. With the exception of Publishing, all divisions showed deficits, as expected. Most of the deficit in the Education and Research divisions comes about because their estimated fair share of office costs has been charged to the their account, - i.e., transferred from General, where it formerly resided.

The largest revenue, by far, comes from sales of subscriptions to the Journal and Bulletin, but substantial amounts also come from membership fees, donations, meeting registrations, and foreign (i.e. U.S.) exchange. We continue to seek ways in which Camel can generate revenue. We appreciate the sensitivity of staff and committee chairs in keeping within their budgets, indeed often coming in under budget. Without this, we might well have run a deficit in 1999.

In some respects, the investment income was a disappoint-

ment. In 1999, we began our new policy of entrusting the two investment accounts (Endowment Fund and Olympiads Fund) to a passive money-manager (TD Quantitative Capital). A combination of transfer costs and volatile markets resulted in a yield which did not come up to expectations. We remain convinced, however, that the move to a money-manager is correct, and we have every reason to expect better yields on our investments in the future.

For the first time, there was an expenditure from the Endowment fund for Endowment Grants. We expect that future years will show considerably larger outlays, as the Endowment Grants Program evolves.

NEWS FROM DEPARTMENTS

Concordia University, Montréal, PQ
Promotions: Pawel Gora, (Professor, June 2000), Francisco Thaine (Professor, June 2000).

Appointment: Galia Dafni (Assistant Professor, Harmonic Analysis, Partial Differential Equations, Several Complex Variables, June 2000).

Award : Galia Dafni, University Faculty Award.

Visitors: Marco Bertola (Italy, Mathematical physics; Axiomatic quantum field theory, May 2000-May 2001); Xifang Cao, (China, Soliton theory and differential geometry, July 2000-June 2001); Alexey Kokotov, (Russia, Analysis on manifolds with singularities, C*-algebras, Partial differential equations, September-December 2000); Jie Xiao, (China, Function spaces and composition operators, July 2000 - June 2001).

Dalhousie University, Halifax, NS
Appointments: Dorette Pronk (Assistant Professor, Topology and Category Theory, September 2000), Joerg Richstein (Killam PDF, computational number theory, September 2000).

Award: Dorette Pronk, University Faculty Award.

Simon Fraser University, Burnaby, BC
Appointments: Imin Chen (Assistant Professor, Pure Mathematics, September 2000), David Muraki (Associate Professor, Applied Mathematics, September 2000).

Awards/Distinctions: Jonathan Borwein, Honorary doctorate from the Université de Limoges, France; Carl Schwarz, nominated for the Dean of Science Excellence in Teaching Award.

Other News: As of April 1, 2000 the Department of Mathematics and Statistics ceased to exist, replaced by a Department of Mathematics and a Department of Mathematics and Actuarial Science.

Université de Sherbrooke, Sherbrooke, PQ
Promotion: Ernest Monga (Professeur titulaire, juin 2000).

Visitor: Rita Zuazua, (Université Nationale de Mexique, algébre, septembre-décembre 2000).

University of British Columbia, Vancouver, BC
Appointments: Izabella Laba (Associate Professor, Mathematical Physics, July 2000), Ian Frigaard, (Assistant Professor, Industrial Mathematics, July 2000).

Retirements: Robert Adams, July 2000, Priscilla Greenwood, July 2000.

Awards/Distinctions: Gordon Slade, FRSC; Philip Loewen, UBC Killam teaching prize; Serguei Novocelskii, UBC Killam teaching prize.

University of Lethbridge, Lethbridge, AB
Promotion: Shelly Wismath, (Professor, July 2000).

University of Ottawa, Ottawa, ON
Promotions: Benoit Dionne, (Associate Professor, May 2000), Vodjkan Jaksic, (Associate Professor, May 2000), Victor LeBlanc, (Associate Professor, May 2000).

Appointments: Monica Nevins, (Assistant Professor, Representation Theory of p–adic Lie groups, July 2000).

Retirement/Resignation: Michael P. Closs.

Award/Distinction: Damien Roy, Coxeter-James Lecturer, 2000.

Visitors: Ivan Tanev Ivanov, (Bulgaria, Mathematics, Physics and Logic, September -December 2000), H.A. Niroumand, (Ferdowsi University of Mashhad, Time Series Analysis, October 2000-November 2001). Dariush Shadman, (Sharif University, Differential equations, September 2000-September 2001), Paul Smrz, (University of Newcastle, Differential geometry, October 2000-April 2001).

University of Prince Edward Island, Charlottetown, PEI
Appointment: Shannon Fitzpatrick (Assistant Professor, Graph Theory, August 2000).

University of Victoria, Victoria, BC
Chair: John Phillips, July 2000, succeeding Reinhard Illner.

Appointment: Robert Steacy (Senior Instructor, September 2000).

Promotion: Florin Diacu, (Professor, July 2000).

Retirement: Lowell Hinrichs, (July 2000).

Visitor: Luis Verde-Star, (Mexico City, 2000-01).

University of Waterloo, Waterloo, ON
Promotion: Ross Willard (Professor, July 2000).

Award: Brian Forrest, University of Waterloo Distinguished Teacher Award.

CALENDAR OF EVENTS / CALENDRIER DES ÉVÉNEMENTS

SEPTEMBER 2000   **SEPTEMBRE 2000**

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

25–29 Infinite-dimensional Lie algebras and groups: structure and geometry (University of Toronto)
http://www.fields.utoronto.ca, lietheory@fields.utoronto.ca

25–29 Applications of Singularity Theory to Wave Propagation Theory and Dynamical Systems, (Isaac Newton Institute for Mathematical Sciences, Cambridge, UK)
http://www.newton.cam.ac.uk

OCTOBER 2000   **OCTOBRE 2000**

3–5 International Symposium on Applications of Computer Algebra (Goa, India)
http://tmrf.homepage.com/isaca.html, tmrf@pn3.vsnl.net.in

20–22 One Hundred Years of L'Enseignement Mathématique Symposium (Geneva)
http://elib.zib.de/IMU/ICMI/; EnsMath@math.unige.ch

23–27 Vertex Operator Algebras in Mathematics and Physics (University of Toronto)
http://www.fields.utoronto.ca, lietheory@fields.utoronto.ca

23–27 Applications to Quantum Field Theory, A Newton Institute EuroWorkshop (Isaac Newton Institute for Mathematical Sciences, Cambridge, UK)
http://www.newton.cam.ac.uk

NOVEMBER 2000   **NOVEMBRE 2000**

18–22 International Conference on "Mathematics for Living" (Jordan)
http://www.vsg.edu.au/egypt99/

DECEMBER 2000   **DÉCEMBRE 2000**

9–13 The Ninth International Workshop on Matrices and Statistics, in celebration of C.R.Rao's 80th birthday, (Osmania University, Hyderabad, India).
http://eos.ect.uni-bonn.de/HYD2000.htm

10–12 CMS Winter Meeting / Réunion d'hiver de la SMC (Hotel Vancouver, Vancouver, B. C.)
http://www.cms.math.ca/CMS/Events/winter00

JANUARY 2001   **JANVIER 2001**

9–14 Quasiclassical and Quantum Structures, in the Symplectic Topology, Geometry, and Gauge Theory Program (Fields Institute, Toronto and CRM, Montreal)
http://www.fields.utoronto.ca/symplectic.html

10–13 Joint Mathematics Meeting. AMS MAA (New Orleans Marriott ITT Sheraton New Orleans Hotel, New Orleans, Louisiana)
http://www.ams.math.org/meetings/

MARCH 2001   **MARS 2001**

26–April 7 Symplectic and Contact Topology, Field Theory and Higher Dimensional Gauge Theory, in the Symplectic Topology, Geometry, and Gauge Theory Program (Fields Institute, Toronto and CRM, Montreal)
http://www.fields.utoronto.ca/symplectic.html

MAY 2001   **MAI 2001**

25–29 Annual meeting of the Canadian Mathematics Education Study Group, (University of Alberta, Edmonton)
http://cmesg.math.ca

JUNE 2001   **JUIN 2001**

2–4 CMS Summer Meeting / Réunion d'été de la SMC (University of Saskatchewan, Saskatoon, Saskatchewan)
http://www.cms.math.ca/CMS/Events/summer01

4–13 Hamiltonian Group Actions and Quantization, in the Symplectic Topology, Geometry, and Gauge Theory Program (Fields Institute, Toronto and CRM, Montreal)
http://www.fields.utoronto.ca/symplectic.html

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

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

DECEMBER 2001   **DÉCEMBRE 2001**

8–10 CMS Winter Meeting / Réunion d'hiver de la SMC (Toronto Colony Hotel, Toronto, Ontario)
http://www.cms.math.ca/CMS/Events/winter01

MAY 2002	**MAI 2002**

3–5 AMS Eastern Section Meeting (CRM, Université de Montreal)
http://www.ams.math.org/meetings/

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	**DÉCEMBRE 2002**

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

JUNE 2003	**JUIN 2003**

CMS Summer Meeting / Réunion d'été de la SMC (University of Alberta, Edmonton, Alberta)
Monique Bouchard: meetings@cms.math.ca

DECEMBER 2003	**DÉCEMBRE 2003**

CMS Winter Meeting / Réunion d'hiver de la SMC (Simon Fraser University, Burnaby, British Columbia)
Monique Bouchard: meetings@cms.math.ca

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May/mai	March 15 mars
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Inside page/page intérieure: 7.5 x 10 in.pouces	

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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 45 $ CAN si l'adresse de l'abonné est au Canada et de 45 $ US autrement.
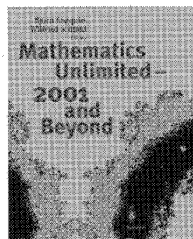
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BJÖRN ENGQUIST, Royal Institute of Technology, Stockholm, Sweden and **WILFRIED SCHMID,** Harvard University, Cambridge, MA (Eds.)

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GREGORY L. NABER, California State University, Chico

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Although this volume can be read independently, Naber carries on the program initiated in his earlier volume, *Topology, Geometry and Gauge Fields: Foundations,* Springer, 1997, and writes in much the same spirit with precisely the same philosophical motivation. A large number of exercises are included to encourage active participation on the part of the reader. This work will be of great interest to researchers and graduate students in the field of mathematical physics.

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