

CMS

NOTES

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Canada and the IMU

Most of us are familiar with the ICM – the International Congress of Mathematicians – which takes place every four years. It is a different story when it comes to the body responsible for arranging the ICMs, the International Mathematical Union (IMU).

The IMU is an organization of more than 60 member countries in which mathematics is cultivated. These countries are divided into five membership categories, depending on intensity of mathematical activity. The most active, Group V, consists at present of the United States, the United Kingdom, Germany, France, Russia, China and Japan. In 1985 Canada moved from Group III to Group IV, and – such has been our progress since then! – we have now been invited to submit documentation to support a possible move to Group V. This proposal has the support of NRC, which looks after our membership fees, and at the time of writing has just been submitted to a mail ballot of member countries.

A country belongs to the IMU through a national Adhering Organization (AO). This is frequently a national academy, but in Canada's case it is the National Research Council. The AO is responsible for establishing a national Mathematics Committee, which in our case is the International Affairs Committee (IAC) of the CMS. The IAC was chaired until recently by Jim Timourian (Alberta); the current chair is the under-

signed. The day-to-day business of the IMU is conducted by its Executive Committee. This consists of the President, two Vice-Presidents, the Secretary and five members at large. At present Jim Arthur (Toronto) is a member at large, the President is David Mumford (Brown) and the long-serving Secretary is Jacob Palis (IMPA, Brazil). Final authority rests with the member countries and is exercised via mail ballot or at the quadrennial General Assemblies (GA), which are usually held immediately prior to the ICMs. The agenda typically includes such items as the location of the next ICM and the election of a new Executive.

Each member country has the opportunity to put names in nomination for the Executive Committee of the IMU and its various commissions. The IAC would be happy to receive suggestions from readers, which can be sent to the CMS office or to the committee at iac@cms.math.ca. These should include supporting information and should arrive as soon as possible.

The IMU commissions mentioned above include the International Commission on Mathematical Instruction (ICMI), the Commission on Development and Exchange (CDE) and the International Commission on the History of Mathematics (ICHM).

(continued on page 3)

CMS NOTES
NOTES DE LA SMC

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EDITORIAL

‘The old order changeth, yielding
place to new ...’
Alfred Lord Tennyson

The last issue of the *Notes* inaugurated a few changes in style, content and presentation. Initial comments indicate that these are well received by the membership.

Speaking of change, many mathematics departments in Canada and the U.S. are busy introducing changes in the course offerings of their undergraduate and graduate programmes. Due to declining enrolments, cut-backs in funding and frugal hiring policies, the job market for mathematics graduates is at a low ebb. This has resulted in less incentive for students to take courses in mathematics. Therefore the need is urgent to find new ways of making our programmes more attractive. More stress is laid on Applied Mathematics, especially of the sort that uses techniques from computing science. Some University departments have already redesigned their courses to meet this new challenge. The University of Toronto Newsletter of February 1998 informs us that their new undergraduate programme seeks to serve not only students heading for an academic career but also those entering a variety of positions requiring a command of advanced mathematics. We are reproducing their article in this issue (see page 6).

A recent news report informs us that high school students in certain provinces, especially Quebec and Nova Scotia, are improving in mathematics according to the 1997 National School Academic Achievement Indicators (SAIP). This is quite encouraging. Any improvement at the school level will be helpful in eradicating negative attitudes of the public towards mathematics. And with better-designed curriculum for undergraduates these bright students would certainly be attracted to University mathematics programmes. Therefore, we should now focus on the

three R's: Rationalize, Ramify and Recruit.

We urge readers of the *Notes* to think about this problem seriously and let us have their comments and suggestions either as letters to the editor or as possible articles.

S. Swaminathan

WORLD MATHEMATICAL YEAR (WMY) 2000

World Mathematical Year 2000 Newsletter 5 has appeared. All 5 issues are available at

<http://www.math.jussieu.fr>

(look under “surfing”).

WMY 2000 is an initiative of the IMU to encourage and coordinate national mathematical activities in the year 2000. There are three aims:

- mathematical challenges for the 21st century
- mathematics as a key for development
- the image of mathematics.

The current issue includes information on Canadian initiatives. The CMS has formed a WMY 2000 Committee, chaired by Bernard Hodgson (bhodgson@mat.ulaval.ca), and the CQEM (Conseil Québécois de l'enseignement des mathématiques) is planning several events: a unified Congress of all mathematical groups and associations of Quebec (Spring 2000); an exhibition of mathematical projects made by students of all levels; and the French exhibitions "Horizons mathématiques" and "L'esprit informatique" will circulate in the large towns of Quebec. The CQEM contact is Richard Pallascio (pallascio.richard@uqam.ca).

(continued from page 1)

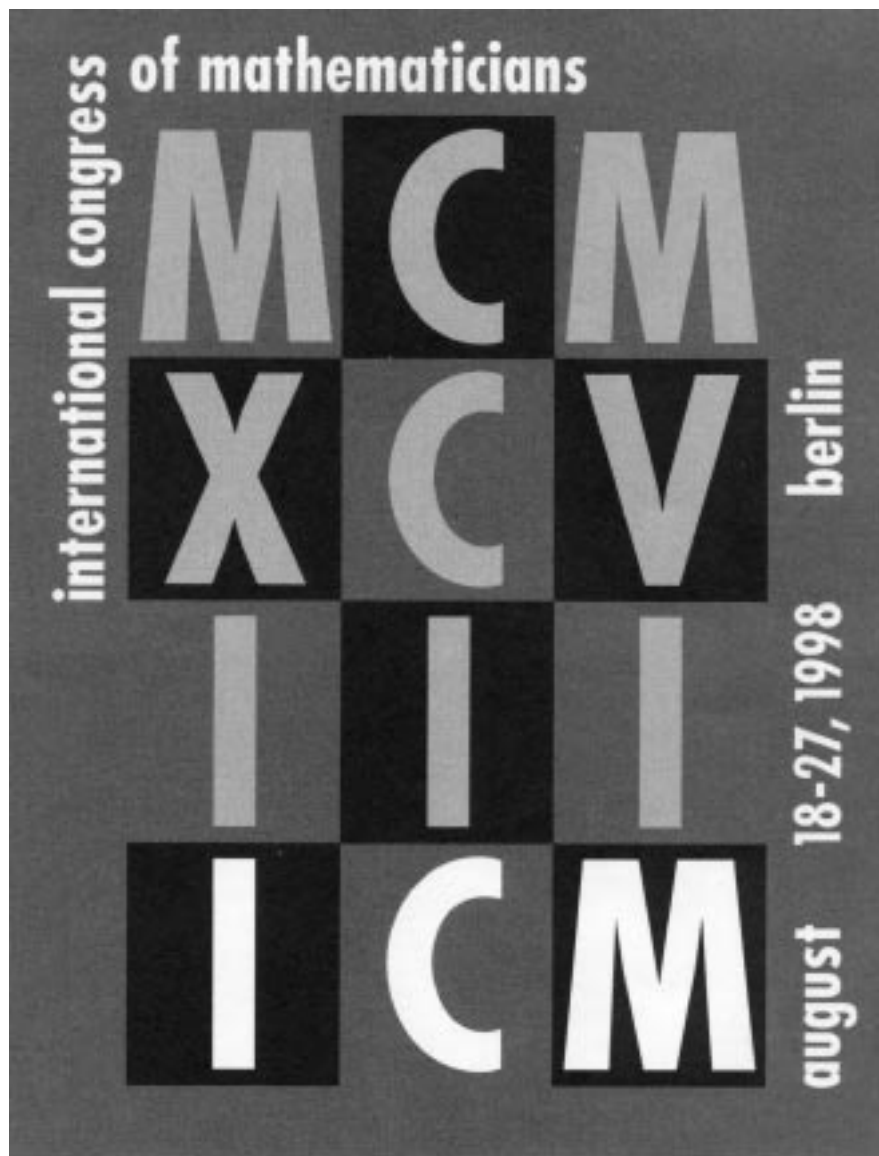
Among other activities designed to support mathematics education, ICMI organizes the International Congresses on Mathematical Education (ICME). In 1992 Canada hosted ICME-7 at Laval, and planning is under way for ICME-9 in the year 2000 in Japan. Anna Sierpiska (Concordia) is a Vice-President of ICMI, and our National Representative to ICMI is Bernard Hodgson (Laval).

The ICMs have been taking place, more or less regularly, every four years since 1893. Two of them were hosted by Canada – Toronto (1924) and Vancouver (1974). The next Congress, ICM'98, will take place in Berlin this summer (**August 18-27**); complete information is available at the IMU web site: <http://elib.zib.de/ICM98>.

A highlight of any ICM is the presentation of the Fields Medals, by common consent the highest distinction available to a mathematician. These medals, first awarded at the 1936 Congress, resulted from a bequest by J. C. Fields, a member of the Toronto Department 1902-32. To comply with his intention that the medals be an encouragement to further research by the recipients, they are traditionally awarded to mathematicians under forty years of age.

It is a very great distinction to be invited to give a plenary address at an ICM (this year there are 19), or even a 45-minute lecture in one of the parallel sessions (18 sections this year). At ICM'98 the following Canadians or members of Canadian departments will be giving invited 45-minute lectures:

- Stevo Todorcevic, Section 1 (logic)
- James G. Arthur, Section 7 (Lie groups and algebras)
- Nigel Higson, Section 8 (analysis)
- Nicole Tomczak-Jaegermann, Section 8 (analysis)



- Bernard Hodgson, Section 18 (teaching and popularization of mathematics)

There have as yet been no Canadian Fields medallists, and only a few plenary speakers (Louis Nirenberg, Raoul Bott, George Duff, Eric Milner, Robert Langlands). However, given the rapidly-increasing level of research in Canada, there is every reason to be optimistic!

Peter Fillmore (Chair of the IAC)

Malgorzata Dubiel (Simon Fraser University) has been elected as the next President of the Canadian Mathematics Education Study Group (CMESG). She was a member of the CMS Education Committee.

AWARDS / PRIX

Steacie Fellowship



Michael Ward

Dr. Thomas A. Brzustowski, President of NSERC, announced in February that UBC mathematics professor Michael Ward has been awarded one of the country's top research awards - a 1998 E.W.R. Steacie Memorial Fellowship.

"Dr. Ward is leading an international renaissance in applied mathematics, a field that is capturing attention for providing hard analytical and numerical answers for difficult problems in science, engineering and industry," said Dr. Brzustowski. Dr. Ward has explored much of this field in remarkable depth, analyzing new models that are being used in areas such as reaction-diffusion theory, diffusive phenomena in materials science, combustion, fluid mechanics and predicting the performance of semiconductor devices. "His ability to see mathematical possibilities in real world situations, to conceive solutions and to inspire others by his approach, and with mathematics in general, is truly remarkable."

In adding his congratulations, Dr. Ron Duhamel, Secretary of State (Science, Research and Development), said, "Dr. Ward's exceptional research, along with that of other young university researchers like him, creates a better future for all Canadians. Research and innovation are the building blocks of modern societies and economies."

While Dr. Ward has made his mark internationally in classical applied mathematics and particularly in asymptotic analysis, he has also made major theoretical advances in the theory of metastability. Metastable states remain stationary over a long time scale but vary slowly over much longer periods of time. Such phenomena are prevalent in many physical systems, including problems in materials science, but are very hard to analyze. Dr. Ward's methods for analyzing them have evolved into a new mathematical technique that has entered wide use.

With his Steacie Fellowship, he plans to investigate other classes of problems involving weakly diffusive phenomena. Examples include vibrations in thin plates in which part of the plate has been cut out, the localization of patterns in mathematical models of morphogenesis, changes in chemical reactions that occur around a defect on a reacting surface, the formation of hot spots in heated ceramics, and the diffusion of oxygen through small capillaries to muscle cells. While different phenomena, for Dr. Ward they all share a common mathematical thread, and are promising ground for creative study.

The NSERC fellowship is one of only four awarded each year. The honour is given to university researchers who are capturing international attention for outstanding scientific or engineering achievement. Under the terms of the fellowship, NSERC will provide the University of British Columbia with the full amount of Dr. Ward's salary for up to two years. The fellowship will free him to pursue his innovative research full-time, as well as obtain significant new research funding from NSERC.

The three other 1998 Steacie fellows are Sara Iverson, Department of Biology, Dalhousie University;

Jonathan Schaeffer, Department of Computing Science, University of Alberta; and Louis Taillefer, Department of Physics, McGill University.

The E.W.R. Steacie Memorial Fellowships will be presented by His Excellency, The Right Honourable Romeo LeBlanc, Governor General of Canada, in a ceremony at Rideau Hall, Ottawa, on April 27.

Editor's Note: Professor Ward is also the winner of the Coxeter-James Prize for 1997, as reported in our February/March issue.

1997 Sacks Prize



Ilijas Farah

Dr. Ilijas Farah (York University) is the co-recipient of the 1997 Sacks prize, with Dr. Tom Scanlon of the MSRI, Berkeley.

Dr. Farah received his Ph.D. in June, 1997 at the University of Toronto, Department of Mathematics, under the direction of Stevo Todorcevic. His thesis contains remarkable results concerning the structure of analytic ideals and their quotients.

The Sacks Prize recognizes the author(s) of the best doctoral dissertation(s) in mathematical logic each year. It was created to honor Professor Gerald Sacks, MIT and Harvard, for his unique contribution to mathematical logic, particularly as advisor to a large number of excellent Ph.D. students.

ICMI Study

On the Teaching and Learning of Mathematics at University Level

The International Commission on Mathematical Instruction (ICMI), an official commission of the IMU, has recently released a Discussion Document (ICMI Bulletin 43) relating to the above Study. As part of the Study there is to be a conference in Singapore from December 8th-12th this year, and the Discussion Document invites submissions from people who might be interested in attending that conference.

As a result of the changing world scene, ICMI feels that there is a need to examine both the content and future of the teaching and learning of mathematics at university level. The primary aim of this study is therefore to pave the way for improvements in this area for all students.

In order to achieve this aim the study will attempt to

- identify, review, encourage and disseminate, research in educational matters at the tertiary level;
- identify and describe major approaches to tertiary mathematics teaching within different cultures and traditions;
- identify obstacles which might prevent the learning of mathematics;
- discuss equity and other issues relating to mathematics education at university level;
- discuss the goals of teaching mathematics to a range of students with different backgrounds and needs, and discuss who should be responsible for that teaching;
- find ways to meet changing needs without compromising the integrity of the subject;
- identify, publicise, and expose to scrutiny, new teaching methods and the positive use of technology;
- discuss the transition and the relations between secondary school and university;
- consider ways to improve the preparation of teachers of mathematics at university level.

The work of this Study will take place in two parts. The first consists of a conference which is to be held in Singapore from December 8th to 12th, 1998. English will be the language of the conference. The conference will be a working one where every participant will be expected to be active. Current planning is for a limited attendance of about 75 persons.

Given the style of the conference, we anticipate a variety of types of contributions that will be presented in plenary sessions, working groups, panels and short presentations. Presentations may include position papers, discussion papers, surveys of relevant areas, reports of projects, or research papers of an educational nature.

We invite you to make a submission for consideration by the International Programme Committee no later than **May 1, 1998**. Submissions should be up to three pages in length and may be emailed, faxed or sent as hard copy. They should be related to the problems and issues identified in the discussion document but need not be limited to these alone. You might also draw to the attention of the Committee, the names of other people whom you feel ought to be invited, stating the type of contribution they might make. We would appreciate knowing the nature and results of related studies in this area.

Participation in the conference is by invitation only. Invitations to those whose submissions have been accepted will be made in July, 1998. At the same

time invitees will be asked to produce a longer version of their submission for publication in the pre-conference proceedings. The Study organisers are seeking funds to provide partial support to enable participants from non-affluent countries to attend the conference but it is unlikely that full support will be available for any one individual.

The second part of the Study is a publication which will appear in the ICMI Study Series. This publication will be based both on the contributions requested above and the outcomes of the conference working group and panel deliberations. The exact format of the publication has not yet been decided but it is expected to be an edited, coherent book which it is hoped will be a standard reference in this field for some time.

The Discussion Document, and information relating to the conference, can be found on the web at the address below. All contributions, suggestions, and enquiries concerning the Study should be sent, before **May 1, 1998**, to the chair of the programme committee:

Derek HOLTON
Dept. of Mathematics and Statistics
University of Otago
P.O. Box 56
Dunedin, New Zealand
E-mail: dholton@maths.otago.ac.nz
Facsimile: (+64-3) 479 8427

For further information, please contact Joel Hillel

(jhillel@vax2.concordia.ca),

Concordia University, a member of the programme committee for this Study, or Bernard R. Hodgson

(bhodgson@mat.ulaval.ca),

Université Laval, the Canadian representative to ICMI.

<http://elib.zib.de/IMU/ICMI/bulletin/43/Study.html>

Please submit all letters, queries, articles, news, etc. for the Mathematics Education Column to: Dr. Harvey Gerber, Department of Mathematics and Statistics, Simon Fraser University, Burnaby, British Columbia V5A 1S6 or by e-mail at gerber@sfu.ca

or notes-education@cms.math.ca

We encourage you to submit articles for the Mathematics Education Column in \LaTeX format.

Veillez faire parvenir lettres, requêtes, articles, nouvelles, etc. pour la section de l'Enseignement des mathématiques au : Dr. Harvey Gerber, Department of Mathematics and Statistics, Simon Fraser University, Burnaby, British Columbia V5A 1S6 ou par courrier électronique à gerber@sfu.ca ou notes-education@smc.math.ca

Nous apprécierions recevoir vos articles pour la section de l'Enseignement des mathématiques en format \LaTeX .

An Undergraduate Mathematics Program (University of Toronto)

Reprinted with permission from the University of Toronto, Mathematics Department Newsletter, February 1998.

The older readers of this newsletter will recall the Honours Program in Mathematics, Physics and Chemistry which continued until 1970. This was drastically changed in the 1970s, when qualifying for a degree was changed to require amassing fifteen or twenty full-course credits. This allowed much more flexibility in designing specialist programs, for students with a broader range of goals. The department, under the leadership of our current associate chair, Ed Bierstone has just redesigned our undergraduate program to serve not only students heading for an academic career but those entering a variety of positions requiring a command of advanced mathematics.

There are three specialist programs sponsored by the department: Mathematics, Mathematics and its Applications, and Applied Mathematics. Each of these has optional areas of concentration, and graduating students will receive a transcript in which both the specialization and area of concentration are recorded.

The Mathematics Specialist Program has long been the flagship program of the department for students who want a deep knowledge of the subject and will continue into graduate work. The graduates of the program have become top mathematicians in Canada and internationally.

The new Specialist Program in Mathematics and its Ap-

plications is intended for students with career goals in teaching, computer science, the physical sciences and finance. It begins with courses in computer science, analysis and linear algebra. Later courses in the core program include probability and statistics, advanced calculus or analysis, advanced linear algebra, ordinary differential equations, complex variables, rings and fields, group theory. Optional areas of concentration cover the different student interests. There is provision for students to design their own concentrations, for example, a student may be interested in biology, another active area of applied mathematics.

The Applied Mathematics specialist program builds on a base of computer science, analysis, linear algebra and statistics in the first two years. Students in their final two years will be studying measure and integration theory, real and complex variables, differential geometry, partial differential equations, operations research, quantum theory and relativity.

Open to undergraduates, not only in mathematics but in other subjects, is the Professional Experience Year. After second year, incumbents interrupt their studies for a 16-month work term to gain industrial experience. This arrangement has proved to be particularly satisfactory as it provides the employer and student to initiate and complete a major project.

Conference in Honour of Peter A. Fillmore and Heydar Radjavi (Dalhousie University)

The Department of Mathematics, Statistics and Computing Science, Dalhousie University, is organizing a conference on *Operator Theory* to be held on June 11, 1998 in the Chase Building, Dalhousie University, Halifax, N.S. This confer-

ence is in recognition of services from Professors Peter A. Fillmore and Heydar Radjavi to Dalhousie University. The registration fee is \$50.00. Further information can be obtained from the Chair, Dr. R.P. Gupta, email: gupta@mscs.dal.ca

**CMS 1998 Summer Meeting
University of New Brunswick
(Saint John)
Saint John, New Brunswick
June 13-15, 1998**

Third Announcement

Please refer to the Second Announcement in the February/March issue of the *CMS Notes* for more complete information on the scientific, education and social programmes. This announcement features the updated timetable and any changes to the programmes previously announced. The most up-to-date information concerning the programmes, including scheduling, is available at the following world wide web address:

<http://www.camel.math.ca/CMS/Events/summer98/>

Meeting registration forms and abstract forms for contributed papers may be found in the February/March issue of the *CMS Notes*.

Programme Updates

Convex Geometry: Aljosa Volčič (Trieste) and Asia Weiss (York) will not be speaking. Włodzimierz Kuperberg (Auburn) will be speaking.

Operator Theory: A. Donsig (Waterloo), R. Drnovsek, M. Omladic, and M. Putinar (UCSB) will speak.

Discrete Mathematics: Chris Godsil (Waterloo) will not be speaking. Ramaswamy Chandrasekaran (Texas) will speak.

**Réunion d'été 1998 de la SMC
Université du Nouveau-Brunswick
(Saint John)
Saint John, Nouveau-Brunswick
du 13 au 15 juin 1998**

Troisième annonce

Veuillez consulter la deuxième annonce dans le numéro de février/mars des *Notes de la SMC* pour obtenir de l'information détaillée sur les programmes scientifique et pédagogique, et les activités sociales. La présente annonce contient l'horaire et tous les changements aux programmes annoncés

Acknowledgements

The CMS wishes to thank the Centre de recherches mathématiques and The Fields Institute for their financial support of scientific sessions at this meeting.

The CMS wishes to acknowledge the contribution of the Meeting Committee in presenting exciting scientific, educational and social programmes. Thanks are also extended to members of the host department who have taken time from their regular duties to help out.

Meeting Committee

Meeting Director: Robert Rosebrugh (Mount Allison), *Local Arrangements Committee Chair:* Abraham Punnen (UNBSJ), *Category Theory:* Richard Wood (Dalhousie), *Convex Geometry:* A.C. Thompson (Dalhousie), *Discrete Mathematics:* Katherine Heinrich and Brian Alspach (SFU) and Abraham Punnen (UNBSJ), *Education - Mathematicians teaching statistics:* Maureen Tingley and Barry Monson (UNBF), *Graduate Seminar:* Jennifer Mills (UNBSJ), *Low Dimensional Topology:* Jack Gegenberg (UNBF), *Operator Theory:* Heydar Radjavi (Dalhousie), *Relativity and geometry:* Jacques Hurtubise and Niky Kamran (McGill), *Other members:* Joan Adams (UNBSJ), Monique Bouchard (CMS) – Ex-officio, Mohammad Hamdan (UNBSJ), Jon Thompson (UNBF), G.P. Wright (CMS) – Ex-officio.

Items also published with this announcement

List of speakers and titles of talks
Map - University of New Brunswick (Saint John)
Updated Timetable - block schedule

In the next issue of the *CMS Notes*

Fourth Announcement
Updated Timetable - block schedule

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

<http://www.camel.math.ca/CMS/Events/summer98/>

Un formulaire d'inscription et un formulaire de résumé pour communications libres étaient inclus dans le numéro de février/mars des *Notes de la SMC*.

Changements au programme

Géométrie convexe : Aljosa Volčič (Trieste) et Asia Weiss (York) ne prendront pas la parole. Włodzimierz Kuperberg (Auburn) prendra la parole.

Théorie des opérateurs : A. Donsig (Waterloo), R. Drnovsek, M. Omladic, et M. Putinar (UCSB) prendront la parole.

Mathématiques discrètes : Chris Godsil (Waterloo) ne prendra pas la parole. Ramaswamy Chandrasekaran (Texas) prendra la parole.

Remerciements

La SMC désire remercier le Centre de recherches mathématiques et l'Institut Fields d'avoir contribué financièrement aux séances scientifiques de la Réunion.

La SMC tient à remercier le Comité des Réunions, qui a contribué à l'organisation des activités scientifiques et sur l'éducation, ainsi que des activités sociales. Merci également à toutes les personnes du département hôte qui ont empiété sur leurs heures de travail habituelles pour nous venir en aide.

Comité des Réunions

Directeur de la Réunion : Robert Rosebrugh (Mount Allison), *Président du Comité local de logistique :* Abraham Punnen (UNBSJ), *Théorie des catégories :* Richard Wood (Dalhousie), *Géométrie convexe :* A.C. Thompson

(Dalhousie), *Mathématiques discrètes :* Katherine Heinrich et Brian Alspach (SFU), et Abraham Punnen (UNBSJ), *Éducation - Des mathématiciens qui enseignent la statistique :* Maureen Tingley et Barry Monson (UNBF), *Séminaire pour étudiants diplômés :* Jennifer Mills (UNBSJ), *Topologie en basses dimensions :* Jack Gegenberg (UNBF), *Théorie des opérateurs :* Heydar Radjavi (Dalhousie), *Relativité et géométrie :* Jacques Hurtubise et Niky Kamran (McGill), *Autres membres :* Joan Adams (UNBSJ), Monique Bouchard (SMC) – membre d'office Mohammad Hamdan (UNBSJ), Jon Thompson (UNBF), G.P. Wright (SMC) – membre d'office.

Documents publiés avec cette annonce

Liste des conférenciers avec titres de conférences
Carte - Université du Nouveau Brunswick (Saint John)
Horaire révisé

Dans le prochain numéro des *Notes de la SMC* :

Quatrième annonce
Horaire révisé

SCHEDULED SPEAKERS / CONFÉRENCIERS PRÉVUS

Here is a list of the scheduled speakers, along with the titles of their talks where available. Abstracts for all talks may be found at the following world wide web page after May 1:

<http://www.camel.math.ca/CMS/Events/summer98/>

Voici les conférenciers prévus, ainsi que les titres de leurs conférences. Les résumés pour tous les conférences seront disponibles à l'adresse Web suivante après le 1er mai :

<http://www.camel.math.ca/CMS/Events/summer98/>

JEFFERY-WILLIAMS LECTURE CONFÉRENCE JEFFERY-WILLIAMS

George Elliott (University of Toronto and University of Copenhagen) *C*-algebras — the first fifty years*

KRIEGER-NELSON LECTURE CONFÉRENCE KRIEGER-NELSON

Catherine Sulem (University of Toronto) *Nonlinear Schrödinger equation and wave collapse*

PUBLIC LECTURE CONFÉRENCE PUBLIQUE

F. William Lawvere (SUNY Buffalo) *Everyday physics of extended bodies or why functionals need analyzing*

PLENARY SPEAKERS CONFÉRENCIERS PRINCIPAUX

Kenneth R. Davidson (University of Waterloo) *Polynomially bounded operators*

Detlef Gromoll (SUNY Stony Brook)

Erwin Lutwak (Polytechnic University, Brooklyn) *The Minkowski problem after 100 years — lots of new questions*

Stephen Schanuel (SUNY Buffalo) *Objective number theory*

SPECIAL SESSIONS / SÉANCES SPÉCIALES

Category Theory / Théorie des catégories
 (Org: Richard Wood)

Michael Barr (McGill University) **-autonomous categories*

Marta Bunge (McGill University) *Covering toposes with singularities*

Peter Freyd (Philadelphia, Pennsylvania)

André Joyal (Université du Québec à Montréal)

F. William Lawvere (SUNY Buffalo) *Galilean 'monoids'*

Michael Makkai (McGill University) *Weak higher dimensional categories: a progress report*

Susan Niefield (Union) *Monoidal (bi)categories, bimodules, and adjunctions*

Robert Paré (Dalhousie University) *Functorial finite differences*

Joan Wick Pelletier (York University) *Points and simplicity in quantales*

Stephen H. Schanuel (SUNY Buffalo)

Walter P. Tholen (York University) *Topology based on maps*

Myles Tierney (Rutgers) *Some remarks on torsors*

Robert F.C. Walters (Sydney) *Bicategories of processes*

Convex Geometry / Géométrie convexe
 (Org: A.C. Thompson)

Lynn Batten (University of Manitoba) *Linear binary codes of minimum distance 4 or 5*

Tibor Bisztriczky (University of Calgary) *A construction for periodically-cyclic (2m)-polytopes*

J. Bracho (Nat. University Mexico)

Beifang Chen (Hong Kong University) *Minkowski Algebra of Convex Sets*

Robert Dawson (Saint Mary's University) *A generalized face number for regular hyperbolic honeycombs*

B. Dekster (Mount Allison University) *A version of the Illuminatio Problem*

Robert Erdahl (Queen's University) *Dicings, zonotopes, and Voronoi's conjecture on parallelhedra*

Richard J. Gardner (Western Washington University) *Discrete tomography - a brief survey of recent results*

Paul Goodey (University of Oklahoma) *Inequalities between projection functions of convex bodies*

Eric Grinberg (Temple and Polytechnic University) *Operational properties of the cosine transform*

Peter M. Gruber (University of Technology, Vienna) *Optimal arrangements of points on Riemannian 2-manifolds and applications*

Daniel Klain (Georgia Technical University) *An Euler relation for valuations on polytopes*

Alexander Koldobsky (University of Texas at San Antonio) *A functional analytic approach to the Busemann-Petty problem on sections of convex bodies*

James D. Lewis (University of Alberta) *An Apollonius theorem for convex sets*

Barry Monson (University of New Brunswick) *Realizations of regular toroidal maps*

Konstantin Rybnikov (Queen's University) *Oriented matroids from liftings and stresses*

Rolf Schneider (Albert-Ludwigs-Universität) *Convex bodies in singular relative positions*

Rick Vitale (University of Connecticut) *Intrinsic volumes and Gaussian random processes*

Elizabeth Werner (Case Western Reserve) *Santaló regions and polytopes*

Gaoyong Zhang (Polytechnic University) *The p-Minkowski problem of polytopes*

Operator Theory / Théorie des opérateurs

(Org: Heydar Radjavi)

Hari Bercovici (Indiana University) *Norm ideal perturbations of commuting self-adjoint operators***Man-Duen Choi** (University of Toronto)**Raúl Curto** (University of Iowa)**Kenneth R. Davidson** (University of Waterloo)**Allan Donsig** (University of Waterloo) *Algebraic isomorphisms of limit algebras***R. Drnovsek** (University of Ljubljana) *On reducibility of operator semigroups***Douglas Farenick** (University of Regina) *Extremal matrix states on operator systems***Don Hadwin** (University of New Hampshire) *Finitely strongly reductive operators***Michael P. Lamoureux** (University of Calgary)**Leo Livshits** (Colby College)**Victor Lomonosov** (Kent State University) *Density theorems in Banach algebras***Gordon MacDonald** (University of Prince Edward Island) *Principal-ideal bands***Laurent W. Marcoux** (University of Alberta) *Unitarily-invariant linear spaces in C^* -algebras***Benjamin Mathes** (Colby College)**Eric Nordgren** (University of New Hampshire)**M. Omladic** (University of Ljubljana) *Irreducible semi-groups with multiplicative spectral radius***V. Paulsen** (Houston State University)**Stephen Power** (University of Lancaster, U.K.) *Some Grothendieck group invariants for operator algebras***Mihai Putinar and Harold S. Shapiro** (UCSB) *The Friedrichs operator of a planar domain***P. Rosenthal** (University of Toronto) *Orbit-transitivity versus orbit-reflexivity***Peter Semrl** (University of Maribor, Slovenia) *Elementary operators***Ahmed Ramzi Sourour** (University of Victoria)**Relativity and Geometry****Relativité et géométrie**

(Org: Jacques Hurtubise and Niky Kamran)

R. Bielawski (Max Planck Institute, Bonn)**Charles Boyer** (University of New Mexico)**A. Coley** (Dalhousie University)**A. Dancer** (McMaster University)**Paul Ehrlich** (University of Florida)**T. Ilmanen** (Max Planck Institute, Leipzig)**M. Kossowski** (University of South Carolina)**Hans Künzle** (University of Alberta)**R. McLenaghan** (University of Waterloo)**Maung Min-Oo** (McMaster University)**B. Tupper** (University of New Brunswick)**John Wainwright** (University of Waterloo)**McKenzie Wang** (McMaster University)**Gilbert Weinstein** (University of Alabama at Birmingham)**Low Dimensional Topology
Topologie en basses dimensions**

(Org: Jack Gegenberg)

Steve Boyer (Université du Québec à Montréal)**Steven Braham** (Simon Fraser University)**John Bryden** (University of Calgary)**Steve Carlip** (University of California at Davis)**Lisa Jeffrey** (McGill University)**Rob Meyerhoff** (Boston College)**Nabil Sayari** (Université du Québec à Montréal)**Denis Sjerve** (University of British Columbia)**Peter Zwengrowski** (University of Calgary)

Discrete Mathematics
Mathématiques discrètes

(Org: Brian Alspach, Katherine Heinrich
and Abraham Punnen)

Jason I. Brown (Dalhousie University) *Roots of chromatic polynomials*

Ramaswamy Chandrasekaran (The University of Texas at Dallas) *Nonnegative integer solutions to linear systems*

Karen L. Collins (Wesleyan University) *Symmetry breaking in graphs*

Shannon Fitzpatrick (University of New Brunswick) *The isometric path number of a graph*

Gregory Gutin (Brunel, The University of West London) *Polynomially searchable sets of tours for the travelling salesman problem: theoretical and experimental results*

Bert Hartnell (Saint Mary's University) *The watchman's walk problem*

Penny Haxell (University of Waterloo) *Packing and covering triangles in dense graphs*

Santosh Kabadi (University of New Brunswick) *Delta-matroid theory*

Richard Nowakowski (Dalhousie University) *Multiplicative measures on graphs*

Suzanne Seager (Mount Saint Vincent University) *Variants of competition graphs*

Karen Seyffarth (University of Calgary) *Small cycle double covers of line graphs*

Nabil Shalaby (Memorial University of Newfoundland) *Skolem sequences: survey and new results*

Education / Éducation

Mathematicians Teaching Statistics
Des mathématiciens qui enseignent la statistique

(Org: Barry Monson and Maureen Tingley)

Robert Dawson (Saint Mary's University)

David Hamilton (Dalhousie University)

Maureen Tingley (University of New Brunswick - Fredericton)

Graduate Student Seminar
Séminaire pour étudiants diplômés
(Org: Jennifer Mills)

Shaun Fallat (College of William and Mary) *Maximum determinant of $(0,1)$ -matrices with certain constant row and column sums*

MITACS NETWORK

A proposal for a new mathematics network has passed its first hurdle. The **Mathematics of Information Technology and Complex Systems** network (MITACS), jointly conceived by the CRM and the Fields and Pacific Institutes, has been selected to proceed to a full proposal. A call from the Network of Centres of Excellence programme resulted in 72 letters of intent, of which 11 have been chosen for the next stage of the competition.

The MITACS network would "bring together leading researchers in the mathematical sciences to focus on the problems of mathematical modelling and management of large scale complex systems and the mathematics of information technology". The main goals of the network are:

- to develop new mathematical tools for problems in areas where mathematics plays a central role;
- to bring together a national network of leading mathematical scientists from universities and industries across Canada; and
- to provide new opportunities for outstanding young mathematical scientists to develop their skills in those areas that will enhance the quality of life in Canada.

The network will support basic and applied research in three theme areas:

- The Mathematics of Biomedical Modelling. Examples of possible project areas include DNA sequencing, the modelling of diseases, dynamical systems, biomedical statistics and medical imaging.
- The Mathematics of Information Technology. Possible project areas include computer and communication networks, the mathematics of software, secure communication and cryptography, geographic information systems and the management of high dimensional data.
- The Mathematics of Risk Modelling and Resource Management, including resource optimization, risk management and the pricing of financial derivatives.

The MITACS Program Leader is Steve Halperin (University of Toronto). For further information visit the web site www.mitacs.math.ca or contact the Program Leader, mitacs@mitacs.math.ca, or any of the Institute Directors.

CALL FOR NOMINATIONS / APPEL DE CANDIDATURES

1998 Adrien Pouliot Award for contributions to mathematics education

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

Nominations must be submitted on the "Nomination Form" available from the CMS office. To assure uniformity in the selection process, please follow the instructions precisely. Documentation exceeding the prescribed limits will not be considered by the Selection Committee. Individuals who made a nomination in 1997 can renew this nomination by simply indicating their wish to do so by the deadline date. Only materials updating the 1997 Nomination need be provided as the original has been retained.

Nominations must be received by the CMS Office no later **April 30, 1998**. Please send six copies of each nomination to:

**The Adrien Pouliot Award
Canadian Mathematical Society
557 King Edward, Suite 109
P.O. Box 450, Station A
Ottawa, Ontario
K1N 6N5**

Coxeter-James Jeffery-Williams Krieger-Nelson Prize Lectureships

The CMS Research Committee is inviting nominations for three prize lectureships.

The Coxeter-James Prize Lectureship recognizes outstanding young research mathematicians in Canada. The selected candidate will deliver the prize lecture at the Winter 1999 Meeting in Montreal, Quebec. Nomination letters should include at least four names of suggested referees.

The Jeffery-Williams Prize Lectureship recognizes outstanding leaders in mathematics in a Canadian context. The prize lecture will be delivered at the Summer 2000 Meeting in Hamilton, Ontario. Nomination letters should include three names of suggested referees.

The Krieger-Nelson Prize Lectureship recognizes outstanding female mathematicians. The prize lecture will be delivered at the Summer 2000 Meeting in Hamilton, Ontario. Nomination letters should include three names of suggested referees.

The deadline for nominations is **September 1, 1998**. Letters of nominations should be sent to:

**Kumar Murty
CMS Research Committee
Department of Mathematics
University of Toronto
Toronto, Ontario M5S 3G3
Email: murty@math.toronto.edu**

Associate Editors CJM and CMB

The Publications Committee of the CMS solicits nominations for four Associate Editors for the Canadian Journal of Mathematics (CJM) and

the Canadian Mathematical Bulletin (CMB). The appointment will be for five years beginning January 1, 1999. The continuing members (with their end of term) are:

CJM Editors-in-Chief:

J. Carrell and N. Ghoussoub (UBC) (1998)

CMB Editors-in-Chief:

A.J. Nicas and M. Min-oo (McMaster) (2000)

Associate Editors:

B. Alspach (Simon Fraser) (1999); J. Bland (Toronto) (2002); J. Friedlander (Toronto) (2001); M. Goresky (Northeastern) (2001); N. Higson (Penn. State) (2000); J.F. Jardine (Western) (2000); J. Lipman (Purdue) (2001); and E. Perkins (UBC) (1999).

The deadline for the submission of nominations is **April 15, 1998**. Nominations, containing a curriculum vitae and the candidate's agreement to serve, should be sent to:

**James A. Mingo, Chair
CMS Publications Committee
Mathematics and Statistics
Queen's University
Kingston, Ontario K7L 3N6**

Prix Adrien Pouliot 1998 pour contributions à des activités mathématiques éducatives

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

spéciales, des conférences ou des concours à l'intention des étudiants, etc.

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

Les mises en candidature doivent parvenir au bureau de la SMC avant le **30 avril 1998**. Veuillez faire parvenir vos mises en candidature en six exemplaires à l'adresse suivante:

Le Prix Adrien Pouliot
Société mathématique du Canada
577 King Edward, Bureau 109
C.P. 450, Succ. A
Ottawa, Ontario
K1N 6N5

Prix de conférence
Coxeter-James
Jeffery-Williams
Krieger-Nelson

Le Comité de recherche de la SMC invite les mises en candidatures pour

les trois prix de conférence de la Société, la Conférence Coxeter-James, la Conférence Jeffery-Williams et la Conférence Krieger-Nelson.

Le prix Coxeter-James rend hommage à l'apport exceptionnel des jeunes mathématiciens au Canada. Le candidat choisi présentera sa conférence lors de la réunion d'hiver 1999 à Montréal (Québec). Les lettres de mises en candidatures devraient inclure les noms d'au moins quatre répondants possibles.

Le prix Jeffery-Williams rend hommage à l'apport exceptionnel des mathématiciens d'expérience au Canada. La Conférence sera présentée lors de la réunion d'été 2000 à Hamilton (Ontario). Les lettres de mises en candidature devraient inclure les noms d'au moins trois répondants possibles.

Le prix Krieger-Nelson rend hommage à l'apport exceptionnel des mathématiciennes au Canada. La Conférence sera présentée lors de la réunion d'été 2000 à Hamilton (Ontario). Les lettres de mises en candidatures devraient inclure les noms d'au moins trois répondants possibles.

La date limite pour les mises en candidatures est le **1 septembre 1998**. Les lettres de mises en candidatures devraient être envoyées à :

Kumar Murty
Comité de recherche de la SMC
Department of Mathematics
University of Toronto
Toronto, Ontario M5S 3G3
Email: murty@math.toronto.edu

Rédacteurs associés **JCM et BCM**

Le comité des publications de la SMC sollicite des mises en candidatures pour quatre postes de rédacteur associé du Journal canadien de mathématiques (JCM) et Bulletin canadien de mathématiques (BCM). Le mandat sera de cinq ans et débutera le 1 janvier 1999. Les membres qui continuent sont :

Rédacteurs-en-chef du JCM :

J. Carrell et N. Ghossoub (UBC) (1998)

Rédacteur-en-chef du BCM :

A.J. Nicas et M. Min-oo (McMaster) (2000)

Rédacteurs associés :

B. Alspach (Simon Fraser) (1999); J. Bland (Toronto) (2002); J. Friedlander (Toronto) (2001); M. Goresky (Northeastern) (2001); N. Higson (Penn. State) (2000); J.F. Jardine (Western) (2000); J. Lipman (Purdue) (2001); E. Perkins (UBC) (1999).

L'échéance pour proposer des candidats est le **15 avril 1998**. Les mises en candidature, accompagnés d'un curriculum vitae ainsi que du consentement du candidat(e), devrait être envoyées à :

James A. Mingo, Président
Comité des publications
Department of Mathematics and
Statistics
Queen's University
Kingston, Ontario K7L 3N6

Memorial University of
Newfoundland
Department of Mathematics and
Statistics

Applications are invited for a one-year term position, renewable for a second year, at the Assistant Professor level, with primary research interest in algebra. The appointment will commence September 1, 1998. A Ph.D. and a proven ability for research and effective teaching are required.

Applications, marked **REF: MS/PMAT/98**, with complete curriculum vitae, a statement of present research and teaching interests, and the names and mailing/e-mail addresses of at least three referees should be sent to:

MS/PMAT/98
Department of Mathematics
and Statistics
Memorial University of
Newfoundland

St. John's, Newfoundland
Canada A1C 5S7

The closing date for receipt of applications is **April 30, 1998** or until the position is filled. Memorial University is committed to the principle of equity in employment. In accordance with the Canadian Immigration requirements, priority will be given to Canadian citizens and permanent residents of Canada.

ATLANTIC PROVINCES COUNCIL FOR THE SCIENCES (APICS) 1997 COMPETITION



*From left to right / De gauche à droite
Robert Dawson, Fai Tam, Kit Wong*

University of New Brunswick Students Win Math Competition

Two UNB students from the Fredericton Campus beat other contestants from the Atlantic region in a mathematics competition held at the University of New Brunswick in Fredericton, October 24, 1997.

The team, senior Chemical Engineering student Fai Tam and third-year Science student Kit Wong, took first place in the Atlantic Provinces Council

for the Sciences (APICS) Undergraduate Mathematics Competition. Second place went to the team of Ian Caines and Brian Yuen of Dalhousie University and third place went to Jacki Li and Brian Coolen, also of Dalhousie University.

Robert Dawson of Saint Mary's University prepared the Competition questions and had the honour of presenting the awards.

*Daryl Tingley
University of New Brunswick
Fredericton*

CALENDAR OF EVENTS / CALENDRIER DES ÉVÉNEMENTS

MAY 1998

11–15 66e Congrès de l'Acfas (Université Laval, Québec)
Acfas : congres@acfas.ca

21–25 The 26th Annual Canadian Operator Theory and Operator Algebras Symposium / Le 26ième Symposium Canadien sur la Théorie des Opérateurs et des Algèbres d'Opérateurs (University of Alberta)

L. Marcoux: <http://www.math.ualberta.ca/~lmarcoux/spots.html>

22–23 A Celebration of Women in the Mathematical, Statistical and Computer Sciences (University of Waterloo)

Daniel Piché: <http://www.math.uwaterloo.ca/~cwim>

22–23 London Mathematical Society joint meeting with the Irish Mathematical Society on Complex Analysis and Dynamical Systems (London, England)
<http://www.lms.ac.uk/meetings/diary.html>

24–30 Thirty-sixth International Symposium on Functional Equations (Brno, Czech Republic)

Frantisek Neuman: neuman@drs.ipm.cz

28–31 19th Annual Meeting of Canadian Applied and Industrial Mathematics Society (CAIMS/SCMAI) and 13th Canadian Symposium on Fluid Dynamics (CSFD) (Simon Fraser University)

Cecil Graham: gac@cs.sfu.ca

29–31 Annual Meeting of Canadian Society for History and Philosophy of Mathematics / Société canadienne d'histoire et de philosophie des mathématiques (University of Ottawa)
Glen Van Brummelen: vanbrumm@compuserve.com

MAI 1998

29–1 Canadian Mathematics Education Study Group/Groupe Canadien d'étude en didactique des mathématiques (University of British Columbia) *Susan Pirie: susan.pirie@ubc.ca*

JUNE 1998

1–5 Industrial Problem Solving Workshop (Calgary, Alberta)
Huaxiong Huang: hhuang@math.ubc.ca

7–19 NATO ASI - 1998 CRM Summer School, The arithmetic and geometry of algebraic cycles (Banff, Alberta)

Louis Pelletier : Banff98@CRM.UMontreal.ca

13–15 CMS Summer Meeting / Réunion d'été de la SMC (University of New Brunswick, Saint John)

Monique Bouchard: meetings@cms.math.ca

JULY 1998

10–21 39th International Mathematical Olympiad (Taipei, Taiwan) *imo98@scc.ntnu.edu.tw*

12–15 Ninth SIAM Conference on Discrete Mathematics (University of Toronto) *meetings@siam.org*

12–16 Society for Mathematical Biology Annual Meeting (University of Toronto) *Leon Glass: glass@cnd.mcgill.ca*

13–17 1998 SIAM Annual Meeting (University of Toronto)
meetings@siam.org

13–17 Third WFNMC Congress (Zhong Shan, China)

Pak-Hong Cheung: phcheung@hkucc.hku.hk

16–18 MAA Mathfest '98 (Ryerson Polytechnic University)
http://www.maa.org/meetings/toronto_desc.html

JUN 1998

JUILLET 1998

27–7 Séminaire de Mathématiques Supérieures - Séminaire Scientifique OTAN (Université de Montréal, Québec)
<http://www.dms.umontreal.ca>

30–31 Western Canada Linear Algebra Meeting (University of Victoria) <http://www.math.uregina.ca/~tsat/wclam.html>

AUGUST 1998**AOÛT 1998**

3–7 Workshop on Coding Theory, Cryptography and Computer Security (University of Lethbridge)

Hadi Kharaghani: <http://www.cs.uleth.ca/cccs98>

18–27 International Congress of Mathematicians (Berlin, Germany) <http://elib.zib-berlin.de/ICM98/>

24–29 Workshop on Mathematical Physics of Polymers and Percolation (University of Toronto)

<http://www.fields.utoronto.ca/>

DECEMBER 1998**DÉCEMBRE 1998**

8–12 International Commission on Mathematical Instruction (ICMI) (Singapore)

<http://elib.zib.de/IMU/ICMI/bulletin/43/Study.html>

13–15 CMS Winter Meeting / Réunion d'hiver de la SMC (Queen's University, Kingston)

Monique Bouchard: meetings@cms.math.ca

MAY 1999**MAI 1999**

29–31 CMS Summer Meeting / Réunion d'été de la SMC (Memorial University of Newfoundland, St. John's)

Monique Bouchard: meetings@cms.math.ca

DECEMBER 1999**DÉCEMBRE 1999**

11–13 CMS Winter Meeting / Réunion d'hiver de la SMC (Université de Montréal)

Monique Bouchard: meetings@cms.math.ca

JUNE 2000**JUIN 2000**

CMS Summer Meeting / Réunion d'été de la SMC (McMaster University)

Monique Bouchard: meetings@cms.math.ca

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

DECEMBER 2000**DÉCEMBRE 2000**

CMS Winter Meeting / Réunion d'hiver de la SMC (University of British Columbia)

Monique Bouchard: meetings@cms.math.ca

RATES AND DEADLINES / TARIFS ET DATES LIMITES

If requested, the rates indicated include electronic availability.

S'il y a lieu, les tarifs indiqués valent aussi pour la disponibilité électronique.

Deadlines for receipt of material are as follows: Les dates limites pour la réception des annonces sont les suivantes :		RATES / TARIFS		
		Advertisement size Grandeur de l'annonce	Educational Institutionnelle	Commercial Commerciale
Feb / fév	15 décembre / December 15	bus. card / carte d'aff.	\$40.00	\$65.00
March / mars	15 janvier / January 15	1/4-page	\$60.00	\$90.00
April / avril	15 février / February 15	1/2-page	\$110.00	\$165.00
May / mai	15 avril / April 15	3/4-page	\$160.00	\$240.00
September / septembre	15 juillet / July 15	1-page	\$200.00	\$300.00
October / octobre	15 août / August 15	Surcharges apply for prime locations / des sur-charges sont applicables pour les places de choix.		
November / novembre	15 septembre / September 15			
December / décembre	15 octobre / October 15			

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