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FROM THE PRESIDENT'S DESK



Jonathan Borwein

*(voir la page 12 pour la version
française)*

Overview.

The recent summer meeting was a resounding success, and is described below. I begin by recording that four prize winners have been selected who will receive their prizes at the next CMS Winter 2001 Meeting December 8-10, to be held at the Toronto Colony Hotel, hosted by York University. They are Nathan Ng, UBC, who will receive the Doctoral Prize, George Bluman, UBC, who has been given the Adrien-Pouliot Award, Kai Behrend, UBC, who will be the Coxeter-James Lecturer, and Jim Timourian, UofA, who will receive the Distinguished Service Award. In each case the Society's and my own warm congratulations are offered.

In the October issue of the CMS Notes, as Deputy Chair of the International Mathematical Union's Standing Committee on Electronic Information and Communication, I will provide some details on the electronic publishing initiatives of the IMU.

International Congress of Mathematicians

Preparation for next IMU Congress in Beijing in August 20-27, 2002 is well underway and I have been able to arrange a Canadian reception during the Congress, hosted at the reportedly spectacular Canadian Embassy by the Canadian Ambassador. This will be jointly sponsored by the CMS and the three institutes.

CMS Summer Meeting

The 2001 Canadian Mathematical Society's Summer Meeting, was hosted by the University of Saskatchewan, from June 2-4. These meetings in addition to their scientific merit were, as we now always expect, an excellent way to build and maintain friendships within the mathematical community.

Following our now usual format, the meeting included ten symposia, contributed papers, four plenary speakers, and two Prize lectures. The Jeffery-Williams Lecture was given by David Boyd, University of British Columbia, the second Coxeter-James lecturer in 1979. The symposium on Number Theory was organized in honour of David who also turns 60 this year.

(see PRESIDENT—page 9)

CMS NOTES
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EDITORIAL



S. Swaminathan

The widespread availability of computers and networking has meant that many traditional courses now include a computer component. It is believed that this helps to make mathematics more understandable and attractive to students. Students with some computing science background welcome working with algorithms in their mathematics classes. But they may overuse their knowledge of programming techniques. The following true story, which was related by Heinz Zemanek, a computer scientist, at a conference some years ago, shows how even correct algorithmic procedure can lead to wrong results if assumptions are incorrect.

Some members of a delegation attending a conference in Eindhoven, the Netherlands, were lodged in a modest bed and breakfast place. A few among them wanted three-minute eggs for breakfast, but always got hard-boiled ones at the table. Most of them accepted this fate, but one member was particularly keen on getting his three-minute egg and tried the entire time to make the cook fulfill his wish. The rest were amused at his attempts and started making bets as to whether or not he would be successful. On the last morning he called the cook and carefully rehearsed the algorithm for a three-minute egg across all language difficulties. "Have the water boiling, then put the eggs in, and after no more than three minutes take them out and serve them. Do you understand?" The cook said "Yes," and went into the kitchen. Full of tension everyone waited for the result. When the egg was brought, it was hard-boiled! After much

laughter, they investigated and discovered that the place received every morning, for some unknown reason, a consignment of cold, hard-boiled eggs.

L'omniprésence des ordinateurs et de la réseautique ont entraîné l'introduction d'un volet informatique à bon nombre de cours de mathématiques traditionnels. On dit qu'il s'agit d'un moyen de faciliter la compréhension des mathématiques et de les rendre plus attrayantes aux yeux des étudiants. Ceux et celles qui s'y connaissent en informatique aiment bien se servir d'algorithmes dans leurs cours de mathématiques, mais certains s'en remettent trop souvent à leurs connaissances en programmation. L'histoire suivante, racontée par l'informaticien Heinz Zemanek à un congrès il y a quelques années, illustre comment même des procédures algorithmiques correctes peuvent donner des résultats erronés si les suppositions initiales sont incorrectes.

Un groupe de participants à un congrès tenu à Eindhoven (Pays-Bas) logeait à un petit gîte modeste. Au déjeuner, quelques personnes demandaient des oeufs mollets, mais on leur apportait toujours des oeufs durs. La plupart acceptaient cette fatalité, mais l'un des participants, qui tenait mordicus à son oeuf mollet, essayait sans relâche de faire comprendre au cuisinier ce qu'il voulait. Le reste du groupe rigolait bien de cette histoire, et on commença même à faire des paris sur la consistance de l'oeuf qui aboutirait dans l'assiette. Le dernier matin, l'homme appelle le cuisinier et lui répète attentivement l'«algorithme» de l'oeuf mollet, malgré la barrière linguistique : «Faites bouillir l'eau, puis mettez les oeufs dedans. Sortez-les au bout de trois minutes, pas plus, et servez-les. Vous comprenez?» Le cuisinier acquiesce et retourne dans la cuisine. Dans un état d'excitation évident, les convives attendaient impatiemment le résultat. Et l'oeuf est arrivé... dur! Tout le monde a bien ri, mais après une petite enquête, on s'est rendu compte que le cuisinier recevait tous les matins, pour une raison inconnue, une cargaison d'oeufs durs froids.

A Miscellany for Mathematicians and Others

Book Review by David Borwein, University of Western Ontario

**Mathematical Conversations –
Selections from The Mathematical
Intelligencer**
compiled by Robin Wilson and
Jeremy Gray
Springer-Verlag New York, 2000
vii+ 488 pages



This book is a diverse collection of forty articles which appeared in *The Mathematical Intelligencer* over the past twenty years. They were chosen by Robin Wilson and Jeremy Gray to present to a general mathematical audience and interested others what it is in mathematics that makes it so useful and intriguing. Wilson and Gray express their own views as follows:

“...there is a need for journals that display in an accessible way what mathematics is and what it can do. Popularization wins friends for the subject. It brings in students, it informs colleagues in other fields, and it helps assure politicians and taxpayers that public money is being well and responsibly spent; it can refresh professional mathematicians who necessarily dig deep into their own studies but still wish to know what their neighbours are doing, and it helps locate and affirm the place of mathematics in the collective cultural activity of humanity.”

They view *The Mathematical Intelligencer* to be such a journal, and their selection of articles is their personal choice of materials to fulfill their aim of reaching and interesting a wide audience. This is, of course, an extremely difficult task since the mathematical knowledge of the target group ranges from almost complete ignorance to specialist expertise. The choice of topics reflects very much the tastes of the selectors. What they consider to be elegant mathematics may appeal to like-minded experts but is usually gibberish to the mathematically “challenged” and may even appear to be dull and tedious to experts in disparate mathematical fields.

Wilson and Gray have divided the book into seven parts and attempted to make the first and last accessible to the non-mathematical. In this they have been only partially successful. For obvious reasons, I’ll not review the material in all seven parts in depth or comprehensively, but will cherry pick to convey some sense of what the book covers.

Part one, entitled *Interviews and Reminiscences*, contains lots of interesting material concerning the views, and in some cases the activities, of the mathematicians Michael Atiyah, Stephen Smale, Jean-Pierre Serre, Julia Robinson, and the physicist C.N. Yang; it also includes anecdotes about Stefan Bergman, Abram Besicovitch, Kurt Gödel, Solomon Lefschetz, and Norbert Wiener. Atiyah is reported to have said “I don’t pay very much attention to the importance of proofs. I think it is more important to understand something.” But then he admits “a proof is important to check your understanding, that’s all. It is the last stage in the operation - an ultimate check - but it isn’t the primary thing at all.” Many mathematicians, myself included, would disagree with this view of the place of proofs in mathematics. Smale describes his

outspoken very left-wing political activism at the time of his receipt of the Fields medal in Moscow in 1966. A story is told about Wiener’s absent mindedness: His family moved house and Wiener was given a key to the new house when he left for work on the day of the move. After work he returned to his old house and was dismayed when he found that his key did not open the door and the house appeared empty. He ran up to a child coming down the street and cried “Little girl, I’m very upset. My family has disappeared and my key won’t fit the lock.” She replied, “Yes, daddy. Mommy sent me for you.”

Part seven, entitled *History of Mathematics*, deals *inter alia* with the life of Kurt Gödel, Louis de Branges’ proof of the Bieberbach conjecture, the bitter controversy between David Hilbert and L.E.J. Brouwer around the editorship of *Mathematische Annalen*, and the present state of Hilbert’s 23 problems. Much of this part would certainly be inaccessible to the non-mathematical public.

The other five parts of the book are addressed to the mathematically knowledgeable.

Part two, entitled *Algebra and Number Theory*, has six articles, including one on Faltings’ proof of the Mordell Conjecture. Another is an essay by M. Ram Murty on *Artin’s Conjecture for Primitive Roots* in which Murty quotes the following insightful comment by Artin:

“We all believe that mathematics is an art. The author of a book, the lecturer in a classroom tries to convey the structural beauty of mathematics to his readers, to his listeners. In this attempt, he must always fail. Mathematics is logical to be sure, each conclusion is drawn from previously derived statements. Yet the whole of it, the real piece of art, is not linear; worse than that, its perception should be instantaneous. We have all experienced

on some rare occasions the feeling of elation in realizing that we have enabled our listeners to see at a moment's glance the whole architecture and all its ramifications."

Number theory of the analytical kind is the subject of R.C. Vaughan's article, *Adventures in Arithmetick, or: How to Make Good Use of a Fourier Transform*, which connects such seemingly disparate themes as the Riemann Hypothesis and Fermat's Last Theorem via investigations into Goldbach's conjecture.

Parts three, four, five, six are entitled *Analysis, Applied Mathematics, Arrangements and Patterns, Geometry and Topology* respectively. Each part contains five or six articles covering a wide range of subjects.

The analysis part deals to quite an extent with counter-intuitive results, such as the Banach-Tarski Theorem which states that it is possible to decompose a sphere S into two spheres S_1 and S_2 , each of which is congru-

ent to S , and various constructions of space filling curves due to Peano, Osgood, Sierpiński, Lebesgue and others; there is also a description of Jeff Xia's proof in 1988 of Painlevé's long-standing conjecture concerning an aspect of the n -body problem.

The applied mathematics part includes articles on string theory, solitons, the relevance of topology to the behaviour of yeast, and one by J. Lambek describing how certain key results in theoretical physics can be expressed concisely in the language of quaternions.

The part on arrangements and patterns deals with both two-dimensional (tailings or tessellations) and three-dimensional (crystallography and solid-state physics) patterns, and ends with an article by H. S. M. Coxeter on the work of two sculptors using hollow triangles.

The geometry and topology part contains an article on the topology of 4-manifolds which includes descrip-

tions of the proofs of Michael Friedman and Simon Donaldson which led to the verification of Poincaré's conjecture concerning smooth 4-manifolds being homeomorphic to a 4-sphere, and gained them Fields Medals in 1986; in addition, there are articles on minimal surfaces, braid and link theory, and hyperbolic 3-manifolds.

To sum up, the book contains a wealth of material with various parts accessible to differing groups of individuals. It is not a book that one would read from cover to cover, but anyone with curiosity and some basic mathematical knowledge could browse through it and pick parts which would be interesting and instructive. I'm afraid, however, that politicians and bureaucrats with little or no mathematical background are unlikely to be driven to funnel more funds into mathematics as a result of trying to read the book. The book would make an ideal gift for anyone mathematically inclined.

FROM THE INSTITUTES

BIRS Call For Proposals

The proposal for the creation of the Banff International Research Station for Innovation and Discovery in the Mathematical Sciences (BIRS) is now fully in motion, according to a news release from BIRS Scientific Director, Robert V. Moody.

A special joint PIMS-MSRI Newsletter devoted to BIRS has been printed and distributed worldwide. It provides extensive information about the modes of operation of BIRS as well as a Call for Proposals. Both the Newsletter and the Call for Proposals are available on the BIRS webpage <http://pims.math.ca/birs/>

Strong proposals, which if possible should be made online, are solicited for the year 2003 (March through December). The 2003 program at BIRS is expected to be vetted by the BIRS Scientific Advisory Board in December 2001. The deadline for submission of proposals is October 1, 2001. BIRS is committed to representing all aspects of the Mathematical Sciences and we look forward to many exciting proposals from the world-wide community.

This is subject to funding decisions by NSERC, NSF, and the Alberta Science Research Authority (ASRA).

Fields Institute Appoints New Director

Kenneth R. Davidson, professor of mathematics, Waterloo University, has been appointed Director of the Fields Institute for Research in Mathematical Sciences, beginning July 1, 2001. Ken Davidson received his undergraduate degree at the University of Waterloo in 1972 and his Ph.D. from the University of California at Berkeley in 1976. He was a C.L.E. Moore instructor at M.I.T. for two years before moving to the University of Waterloo in 1978. His research interests are in operator theory and operator algebras, and he won the Israel Halperin prize in this area in 1985. He was an E.W.R. Steacie fellow 1988-90 and a Killam Research Fellow 1995-97. He was elected a fellow of the Royal Society of Canada in 1992. He has been on the editorial boards of various journals including the CMS journals and *Integral Equations and Operator Theory*. He has served on the CMS in various capacities including Vice President (Ontario) in 1995-97. He sat on the NSERC mathematics GSC in 1990-93, and served as chair; was a member of the NSERC Strategy Implementation Task Force in 1995, and on the Mathematics Steering Committee 1996-98. He served on the Fields Scientific Advisory Panel 1991-96, and was a co-organizer of the C^* -algebra year at the institute.

AWARDS / PRIX

CMS 2001 Education, Doctoral and Service Awards Announced

The winner of the Canadian Mathematical Society's 2001 Adrien Pouliot Award for mathematics education is Dr. George Bluman. Dr. Nathan Ng has won the Society's 2001 Doctoral Prize and Dr. James Timourian will receive the CMS Distinguished Service Award for 2001. All three awards will be presented at the CMS 2001 Winter Meeting Delegates Luncheon on December 9th at the Toronto Colony Hotel.

Adrien Pouliot Award - George Bluman

The Adrien Pouliot Award is for individuals, or teams of individuals, who have made significant and sustained contributions to mathematics education in Canada.

Dr. Bluman did his undergraduate studies at UBC and obtained his doctoral degree from the California Institute of Technology. He is currently Head of the Department of Mathematics at UBC and the CMS Vice-President for the Western Provinces. His research area is symmetries and differential equations and, in addition to 40 research papers, he has written several books and is a member of the editorial board for the Journal of Engineering Mathematics.

For more than three decades, George Bluman has exercised extraordinary leadership and invested a great deal of energy in promoting sound mathematics education and student interest in mathematics in British Columbia. Nationally, he was the Chair of the CMS Education Committee (1978 to 1981) and has been a member of the problems committees for the University of Waterloo contests for many years.

Dr. Bluman has given more than 150 talks and workshops to students and teachers. He developed a very successful workshop format and has mobilized a team of faculty, graduate and undergraduate students who give presentations to schools. Mainly through his leadership, more than 175 schools and 2600 students in British Columbia participate in the annual Euclid Mathematics Contest. In the early 1990's, he introduced a calculus challenge examination at the University of British Columbia, whereby talented mathematics students can qualify for advanced credit and gain access to advanced courses.

At the University level, Dr. Bluman was a founding member of the Institute of Applied Mathematics. From 1989 to 1991, he helped establish an off-campus four-year degree program at the University College of the Cariboo and at Okanagan University College. In the public domain, he has provided encouragement and support for teachers and public schools.

Dr. Bluman was the recipient of a Woodrow Wilson Fellowship (1964) and received the Pacific Institute for the Mathematical Sciences Education Prize in December, 2000.

Doctoral Prize - Nathan Ng

The CMS Doctoral Prize recognizes outstanding performance by a doctoral student who graduated from a Canadian university.

Dr. Nathan Ng was born in Vancouver and obtained his Bachelor's degree from the University of British Columbia (1994), his Master's degree from the University of Toronto (1995), and his Ph.D. from UBC (2000) under the supervision of Dr. David Boyd, the 2001 recipient of the CMS Jeffery-Williams Prize.

His doctoral thesis - Limiting distributions and zeros of Artin L-functions - is in the field of analytic number theory and, in this thesis, Nathan Ng extends and develops, in a far-reaching fashion, the analysis of the fine structure of the distribution of prime counting functions and the Mobius function. The results he obtained have been called "remarkable, surprising and unexpected". Dr. Ng has mastered large areas of both analytic and algebraic number theory, and he is very good at difficult computational problems.

Dr. Ng is a talented teacher and, in 1999, he received a UBC Graduate Student Teaching Award. In August 2001, Nathan Ng will commence an NSERC Postdoctoral fellowship at the University of Georgia under the supervision of Dr. Andrew Granville, one of the world's most distinguished number theorists and a graduate of Queen's University.

Distinguished Service Awards - James Timourian

The CMS distinguished service award is to recognize individuals who have made sustained and significant contributions to the Canadian mathematical community.

Dr. James Timourian obtained his undergraduate degree from Hamilton College (New York) and his doctoral degree from Syracuse University. He has been a member of the Department of Mathematical Sciences at the University of Alberta since 1969 and was the Associate Chair (Undergraduate) for the Mathematical Sciences from 1994 to 1998.

His research areas are singularity theory, elliptic operators and partial differential equations. He has long been interested in undergraduate education, especially first-year and honors calculus and, in 1996, organized a very successful in-service program for Alberta high-school calculus teachers.

James Timourian has made many contributions to mathematics in Alberta. Nationally he has served on and chaired many CMS committees, the Natural Sciences and Engineering Research Council's Grant Selection Committee, and was the Chair of the Canadian National Committee for the International Mathematical Union. He is currently the Chair of the CMS Endowment Grants Committee. Dr. Timourian is a successful entrepreneur in areas such as bio-technology and is a noted philanthropist.

FROM THE VICE PRESIDENTS

by Margaret Beattie (Mount Allison) and Edgar Goodaire (Memorial)

This report, the first of a new series in which CMS Vice-Presidents will describe activities in their regions, was prepared by the outgoing and incoming Vice-Presidents for the Atlantic region.

In late May, 2001, Memorial University (and Yuri Bahturin in particular) ran a highly successful International Workshop on Groups, Rings, Lie and Hopf Algebras. This was sponsored by AARMS and Memorial's Department of Mathematics and Statistics, with funding from the National Program Committee and Memorial. The workshop attracted 40 researchers from 10 countries, from Russia to Japan and Belgium to Brazil. Professor Susan Montgomery of the University of Southern California was named the first AARMS "Distinguished Lecturer." Professor Montgomery gave two talks on "Finite-dimensional Semisimple Hopf algebras." In addition to a plenary talk, "Lie algebras over rings of differential operators", Fields medalist Efim Zelmanov delivered a well attended public address, "Abstract Algebra in the 20th Century", on the first evening of the meeting. More information and the schedule of the meeting may be found at <http://www.math.mun.ca/yuri/GRLHA/default.htm>.

The initials AARMS stand for the "Atlantic Association for Research in the Mathematical Sciences." To raise the profile of mathematics in Atlantic Canada, as do Fields, CRM and PIMS in the rest of the country, AARMS was founded in 1995 and since then has initiated, encouraged and helped to coordinate mathematical research of all stripes in this area. The first director and prime mover behind the concept was Richard Wood (Dalhousie). Under the current executive director, Hermann Brunner (Memorial), AARMS now has a board of twelve directors from within and with-

out the academic community guaranteeing wide representation throughout the area. More details can be found at <http://www.math.mun.ca/aarms/>.

Two other AARMS workshops will be held this summer. From August 2–6, an international workshop on "Dynamical Systems and Their Applications to Biology" organized by Shigui Ruan (Dalhousie), Gail Wolkowicz (McMaster) and Jianhong Wu (York) will be held in Cape Breton, Nova Scotia. From September 28–30, a workshop on "Modelling and Scientific Computation" will be held at the University of New Brunswick (Fredericton), organized by John Stockie, James Watmough and Viqar Husain (New Brunswick). The organizers are three of seven new mathematics appointments at UNB since 1999.

Memorial will host the first annual AARMS Summer School in a year's time. Four courses are planned from July 22 through August 16, 2002, and professors from three countries have already made tentative commitments to the School. Students will be expected to enrol for two courses, each of which will consist of 28 contact hours, so we will be offering what most would consider to be full graduate courses, not workshops or short courses. The School is open to graduate students and promising undergraduates without geographical bias. Interested students (and professors considering the possibility of sending their students) should visit <http://www.math.mun.ca/aarms/SS2002/> for more details.

Educational activities for students at varying levels, many supported by the Canadian Mathematical Society, have long been prominent in Atlantic Canada. In Newfoundland, the W. J. Blundon Math Contest (named after a former head of Memorial's Mathematics and Statistics Department) took place on February 21, 2001. Students

doing particularly well on this, the Euclid and the Fermat Contests came to Memorial for two days in mid-May to attend the 20th annual seminar which recognizes and celebrates the achievements of Newfoundland high school students.

With help from provincial contacts in Nova Scotia and New Brunswick, David Horrocks (Prince Edward Island) coordinated the fifth annual Maritime Mathematics Competition which was held on March 27, 2001 and written by over 350 students. The New Brunswick Mathematics Competition, run annually by the University of New Brunswick and l'Université de Moncton and written simultaneously in Fredericton, Moncton, Edmundston and Shippagan, is targeted at students in grades 7, 8 and 9. In this its 20th anniversary year, 1204 students from 153 schools in 18 school districts participated.

The training camp for the Canadian International Mathematics Olympiad team will take place at the University of New Brunswick from June 17 to July 1. Earlier in the summer, Esso Math Camps for high school students were held at the University of New Brunswick, Fredericton, and at Sir Wilfred Grenfell College, Corner Brook. Dalhousie University will host its second Esso Camp the week of July 16, immediately following the tenth offering of a camp targeted at black students in the Halifax-Dartmouth area. The purpose of all these camps, of course, is to identify, stimulate and encourage mathematical talent in our nation's youth.

Perhaps more so than in other parts of Canada, many close professional and personal relationships have been established over the years in Atlantic Canada, many probably due to APICS. The "Atlantic Provinces Council on the Sciences" carries out its business

via disciplinary committees. Edgar Goodaire is not only the current CMS VP (Atlantic), but also Chair of the APICS Math/Stats Committee. Those not familiar with APICS might be interested in the Math/Stats Committee web site: <http://www.math.mun.ca/apics/index.html>. The Committee, which meets twice a year, organizes an annual conference primarily aimed at undergraduates in the fall of each year. This year's conference will take place at St. Francis Xavier Univer-

sity from October 19 to 21, and will feature student paper sessions, a math contest, the Blundon Lecture by Robert McKelvey (Montana), two other invited lectures by Demetri Terzopoulos (Toronto) and David Bellhouse (Western Ontario), and a Professional Development Workshop primarily intended for new faculty in the region (of whom we have quite a few).

In conjunction with the October APICS meeting, on the same weekend, AARMS usually sponsors one or

two research meetings on more specialized topics. Last year in Halifax, there was a session on Category Theory and another on Bayesian Statistics. This year there will be meetings on Discrete Mathematics (coordinated by Dr. Ping Wang, St. Francis Xavier, and supported by the Fields Institute) and General Relativity and Cosmology (coordinated by Dr. Robert van den Hoogen, also from St. F. X., and sponsored by a major grant from the Perimeter Foundation for Theoretical Physics).

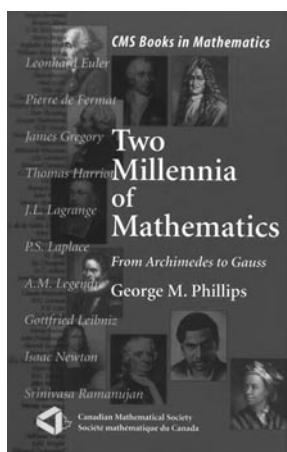
An Exhilarating Romp Through Two Millennia

Book review by Karl Dilcher, Dalhousie University

Two Millennia of Mathematics – From Archimedes to Gauss

by George M. Phillips

CMS Books in Mathematics,
Springer-Verlag New York, 2000
xii+223 pp.



“This book is intended for those who love mathematics”; these are the opening words of George Phillips’ “Two Millennia of Mathematics”. It is clear that the book is also written by someone who loves doing, writing about, and teaching mathematics. Those who prefer a weaker word than “love” in connection with mathematics (and I must say, I find it, along with “beauty”,

sometimes a bit overused), may replace it with “enjoyment”, as in the following quotation from the end of the preface: “I hope you will enjoy reading this book even half as much as I have enjoyed writing it”. Well, the author must have had a great time indeed.

Some authors express their affection for a subject by writing scholarly treatises on their area of research, including histories of particular fields. Others have written excellent popular expositions for the educated but non-mathematical public. “Two Millennia of Mathematics” belongs to neither of these categories. But it is a labour of love in the true sense of this expression, except that it is not laboured at all, and that is one of the best things about it. This book is easy reading on an advanced level.

The approach taken by this book is quite unique: The author acknowledges in his preface that no two persons’ tastes are exactly the same. He then proceeds to make a very subjective and personal choice of material, and this included quoting 11 of his own works and collaborations in the bibliography of 55 items. This might have been very problematic, but here it works well, for several reasons. For one thing, the author explains this “matter that troubles me” in his excel-

lent preface. Furthermore, although tastes may differ, there are some basic criteria of good taste and bad taste on which most mathematicians would agree; the author’s own contributions certainly belong to the former. But the main reason why these self-citations work has to do with a number of important messages this book conveys to those readers who are not already professional mathematicians.

First, mathematics is both an ancient and a very modern and active science. In addition to the two millennia of the title (from Archimedes to Gauss), the book reaches as far back as “Pythagorean” triples on the Babylonian clay tablet Plimpton 322, dated 1900 to 1600 B.C. On the other hand, the latest references were not even published in 2000 (A.D., that is).

Second, and this is what I was referring to above, “many interesting and exciting results in mathematics have been obtained (discovered!) by ordinary mortals, and not only by towering geniuses such as Archimedes and Gauss, Newton and Euler, Fermat and the hundreds of other well-known names”. This is a very comforting thought for me as a working and publishing mathematician who is just an “ordinary mortal”, and for the young and aspiring mathematicians among

the readers. The author modestly uses some of his own results as examples of such contributions "of minuscule importance compared to the mathematics of greatest significance". And yet, both levels are presented together, as equally important in the development of mathematics; probably one shouldn't even talk about different levels here.

The third message is more for the (sophisticated) amateurs and non-mathematicians among the readers. The notorious question, "How can one do research in mathematics? Surely it is all known already!" is addressed in this book, again partly with the author's own recent research contributions, most of which are more or less directly connected with the works of Archimedes and Newton.

The next important message is that there is great enjoyment in doing and teaching mathematics. We as professional mathematicians know this, but for students this message is easily lost in the heavy workload during semesters that are all too short. No reader of this book will miss the sense of enjoyment, be it from the well-chosen mathematics, or from the author's mastery of language and style.

And finally, this book gives a sense of unity between pure and applied mathematics. The two are interconnected and, in fact, the author never speaks in terms of "pure" and "applied".

The first chapter ("From Archimedes to Gauss") is an exhilarating romp through the two millennia, with a few hundred years at each end thrown in for free. In just 44 pages we meet many of the main topics of classical mathematics, some only in passing, others in greater depth. This whirlwind tour begins with Archimedes and π ; the calculations of π by Archimedes are then interpreted as a mean iteration, which remains the leitmotif throughout

the chapter. This leads to Gauss and the AGM, and ends with references to the work of Borwein and Borwein of the 1980's and 90's.

As in a symphony (yes, there are references to music) there is a change in both tempo and theme, as Chapter 2 is only devoted to logarithms. The first half is a standard discussion of exponential and logarithmic functions, as presented in most calculus textbooks. This is followed by a fairly detailed but readable account of Napier's logarithm, and of Napier's and Briggs' constructions of logarithmic tables in those pre-calculus times.

Chapter 3 is on various aspects of interpolations, including finite differences and multivariate interpolation. This is where the author's own contributions appear more than in other chapters.

The last two chapters, entitled "Continued Fractions" and "More Number Theory", together comprising almost 100 pages, can be seen as a core of a first course in number theory. All the important topics are there, and some of the most famous theorems (such as Fermat's little theorem, Wilson's theorem, the quadratic reciprocity law) with proofs are presented in a very readable way. The final two sections give a gentle introduction to some special cases of algebraic integers, enough to prove Fermat's last theorem for the exponent 3, Fermat's theorem on the sum of two squares, and finally Euler's work on sums of cubes. The book ends with the famous anecdote of Ramanujan and Hardy's taxicab number.

Such anecdotes, along with a few tasteful and necessary puns, as well as other playful use of words, are employed sparingly but effectively. I wish that more mathematics books and papers were written so well.

It is difficult to find anything negative to say about this book. The ti-

tle may be a bit misleading, and those looking for a standard history of mathematics will be disappointed; however, this book does not claim to be a history book. While I find the level of rigour quite appropriate, I would have liked to see more warnings to students when an occasional "hand waving" argument is used. Not being a historian, I cannot comment on historical accuracy; certainly all the important dates and facts are correct. However, some reference should have been made to the Swiss mathematician and instrument maker Joost Bürgi (1552–1632) who discovered the logarithm independently of Briggs but published it a few years after the latter, in 1620. Finally, the dates of Briggs' trips to Scotland are probably off by a few years.

These are very minor points compared with the merits of this book, which is also very nicely and tastefully produced, with hardly any typographical errors. One last (standard) complaint: The relatively (but not outrageously) high price of almost US\$50.- will unfortunately mean that very few students will purchase this book, unless it is prescribed as a textbook. It could indeed be used as a text for an elementary number theory course, depending on the instructors' tastes. The book is also suitable as supplementary reading for history of mathematics, numerical analysis, or problem solving courses. There are well-chosen problems (or exercises) at the end of each section, about 170 in total; many of them supplement the material in the text.

Finally, this book would make an excellent choice as a book prize for advanced or graduating students. In fact, if a bright student leaving mathematics for good (as many do) were to hang on to just one mathematics book, I would wish it to be George Phillips' "Two Millennia of Mathematics".

RESEARCH NOTES

Ian Putnam, Column Editor

RSC Fellows Elected

Two statisticians have been elected to the Academy of Science of the Royal Society of Canada.

Nancy M. Reid, Department of Statistics, University of Toronto.

Nancy Reid has made fundamental and deep contributions to the mathematical theory of statistics. Her many articles and authoritative work on conditionality, likelihood and higher order asymptotics have been farreaching and of great importance in the foundations of statistical argument and inference. She is a prolific researcher at the international level, whose research contributions span a broad area of statistical theory and application. She is also an outstanding expositor of difficult ideas whose written and oral presentations of important research areas are studied by students and researchers worldwide.

Robert J. Tibshirani, Department of Statistics, Stanford University.

Robert Tibshirani has made many major contributions to the theory and practice of statistics. He is a world leader in the development of computationally intensive statistical methodology. His work on generalized additive models and flexible adaptive modelling provide powerful tools, which are used by scientists around the world. He has made important contributions to bootstrap methodology, statistical theory, and the fields of genetics, medicine and public health. Dr. Tibshirani's books with Trevor Hastie on generalized additive models and with Bradley Efron on the bootstrap are landmark volumes which have had a great impact on statistical practice.

Monroe Martin Prize

Yury Grabovsky of Temple University and Robert McCann of the University of Toronto have been named the sixth recipients of the Monroe H. Martin Prize. Awarded every five years by the Institute for Physical Sciences and Technology at the University of Maryland, College Park, the prize recognizes outstanding singly authored papers by junior mathematicians.

Two \$2000 awards were made this year. "Exact Solutions to the Transportation Problem on the Line," the paper for which McCann was selected, appeared in Proceedings of the Royal Society of London (Vol. A455, 1999). This paper analyzes the solution of a classical optimization problem that was formulated by Monge in 1781. Couched in an economic setting, the problem is as follows: Given a distribution of iron mines, and a distribution of factories that require iron ore, decide how the mines should supply the ore to the factories so as to minimize the total transportation costs. When the cost is a strictly concave increasing function of the distance traveled, this problem has a unique, geometrically characterized solution with a hierarchical structure. The paper elegantly exploits this structure in the one-dimensional setting to derive an algorithm that obtains the solution by a combinatorial sequence of finite-dimensional optimizations involving convex, separable network flows. McCann received his PhD from Princeton University in 1994.

The Monroe H. Martin prize was established to honor the outstanding contributions of Monroe H. Martin, a professor emeritus at the University of Maryland, College Park. Martin was the founding director of the Institute for Physical Sciences and Technology.

(PRESIDENT—continued from page 1)

The Krieger-Nelson Lecture was given by Lisa Jeffrey, University of Toronto. There were four plenary speakers: Georgia Benkart (Wisconsin), Zoe Chatzidakis (Paris 7), Geoffrey Grimmett (Cambridge), Barry Simon (Caltech) and an excellent public lecture delivered by De Witt Sumners of Florida State University entitled "Calculating the secrets of life: Mathematics in Biology and Medicine". The ten well attended Symposia were as follows:

Abstract Harmonic Analysis (Org: Anthony Lau, University of Alberta and Keith Taylor, University of Saskatchewan); Geometric Topology (Org: Alex Chigogidze and Ed Tymchatyn, University of Saskatchewan); Graph Theory (Org: Brian Alspach and Denis Hanson, University of Regina); Infinite dimensional Lie theory and representation theory (Org: Stephen Berman, University of Saskatchewan); Math-

ematical Education Cognition in Mathematics (Org: Florence Glanfield, University of Saskatchewan); Matrix Analysis (Org: Judi MacDonald, University of Regina); Model theoretic algebra (Org: Bradd Hart, McMaster University/Fields Institute, F.-V. Kuhlmann and S. Kuhlmann, University of Saskatchewan); Number Theory - in honour of David Boyd (Org: Peter Borwein, Simon Fraser University and Michael Bennett, Illinois); Rigorous studies in the statistical mechanics of lattice models (Org: Chris Soteros, University of Saskatchewan and Stu Whittington, University of Toronto); Scattering theory and integrable systems (Org: Jacek Szmigielski, University of Saskatchewan).

All scientific talks were held at the University of Saskatchewan. Some pre-meeting activities, the opening reception and the meeting banquet took place at the Delta Bessborough Hotel. The Delegates' Luncheon on Saturday, June 2

and lunch on Sunday and Monday were also provided with no extra charge: which many participants commented favourably on.

The Meeting Director, Keith Taylor, the Chair of Local Arrangements, Christine Soteris, the session organizers, together with helpers from the local department and the CMS Executive office, deserve our especial thanks. The attendance of 285 was excellent and the consensus was that the conference was first rate.

Other Recent Activities.

Let me highlight some of my other recent activities, for the most part avoiding things Graham Wright has recently described or will soon describe in the *Notes*.

Taskforces The long and productive task force review has finished and I wish to thank all who participated. A complete record of recommendations may be found on the CMS website including the culminating report of Taskforce 9 (See www.cms.math.ca/Projects/-1998/future.html). Many of the recommendations are already implemented and others are being implemented. For example:

Advancement of Mathematics. One of the taskforce recommendations was to establish a Promotion of Mathematics Committee. This has led to the formation of a *Committee for the Advancement of Mathematics*, with fund raising now overseen by a subcommittee of this new committee. It started work at the Summer Meeting.

Publications The outstanding issue for the CMS is to reorganize our publishing activities. While our publications continue to do well in an uncertain and increasingly digital world – each year the future seems less clear! All the Society’s journals are now “fully On-line”. They will not stay timely for long and we are committed to making very significant decisions, *this year*, such as:

- Whether to move forward with a search for a *Director of Electronic Services and Products*? If so, as an academic volunteer – perhaps sitting on the Executive Committee – or as a paid employee?
- How much to engage in “Research and Development” for our publishing and information service? Or should we seek to out-source more, with the AMS or NRC press as our publisher or perhaps only as electronic distributor?
- How best to integrate our electronic and paper publishing? and whether, correspondingly to scale up or down the \TeX office. Should we add an associate \TeX Editor, and actively look for additional business while moving the Digital Editor into the same portfolio? Should

we do this in a centralized or distributed fashion? In a department or in conjunction with one of the Institutes?

An ad-hoc subcommittee was struck in October 2000 (chaired by Tom Salisbury) to consider these matters further. It has triggered design of a business plan (now underway), to lead to a more coherent publication structure to commence in Jan 2003. I will elaborate our decisions in future *Notes*.

CMS Books and Tracts. The CMS has now completed the move of its *CMS Books in Mathematics* series to Springer New York, from Wiley and Sons, and the first ten volumes are now published or in press. There were six titles on sale at the Summer Meeting. Reviews will I am sure, continue to appear in these pages. In June 2000, the CMS launched a parallel series of shorter books *CMS Tracts in Mathematics* to be published by the American Mathematical Society, edited by Ken Davidson and Cam Stewart. Each series hopes to publish broadly and we should directly invite members of other Canadian mathematical science societies to consider publishing their work through these vehicles. (See www.cms.math.ca/Publications/).

National Educational Forum. The CMS Board has decided to hold a national educational forum in Quebec in the Fall of 2002 or, if that proves to be impracticable, in early 2003, with a follow up meeting to be held roughly nine months later in Ontario. These may be viewed as continuing an activity started by the 1995 meeting in Quebec, chaired by Kathy Heinrich. These meetings will bring together roughly 200 people from all provinces and territories representing the different groups with interest in and impact on mathematical education in middle and high school (roughly grades 6-12).

The intention is for the first meeting to function primarily as an opportunity to compare issues and best practices across the country. It should also identify those issues on which subgroups can prepare more detailed findings to be presented at the second meeting. These findings should be published both electronically and on paper and should be distributed widely. Anyone interested in helping design the meeting or merely in participating is encouraged to contact me. It is hoped that the CMS, through these fora and the connections enhanced by them, can function more actively as a facilitator and clearing house on such educational issues.

Kabot. As a pleasant surprise, one of the CMS web-pages “Knot a Braid of Links” was picked by the May 14th Scientific American May 14 (www.scientificamerican.com) as one of the top 50 scientific resources on the web. As many of you will know Kabot adds a mathematical site every week since 1996 (the web stone age!). Congratulations are especially due to Bob Rosebrugh who started Kabot and Nathalie Sinclair who has overseen it for the last three years.

LETTERS TO THE EDITORS

I read the nice reminiscences about George Duff in the CMS Notes. I missed only mention of his eminent service to Math. Reports.

George joined the "funding five" as editor of C.R. Math. Rep. Acad. Sci. Canada with its Vol. X No. 4 in August, 1988. By the No. 1 of Volume XIII in February 1991 he became the managing editor in all but name. He managed the journal very well on less than a shoe-string, doing even some of the manual work (cutting, mailing) himself. He administered it till late 1996 so efficiently that many papers were published (including refereeing) within a few weeks of their submission, as suits a Comptes Rendus type journal; also protecting it from attacks (just as successfully with tact and diplomacy as he protected earlier as "chair" (then "head") the Department of Mathematics of the University of Toronto from student unrest). He eventually helped the smooth passage of Math. Reports into the (quasi-)professional administration of the Canadian Mathematical Society. The Canadian mathematical community owes him a debt of acknowledgement, at least posthumously.

Janos Aczel (Waterloo)

Remember your slight irritation when a calculus student solved a quadratic equation and presented you with the answer 1.732050 instead of the expected, traditional, concise, and exact form for the square root of three with the compact radical sign? The irritation was more than slight if calculators weren't allowed during the test, but that is beside the point. Of course, you are by now resigned to modern math ed preference for things digital.

Gentle persuasion while allowing

for preferences failed to change the hearts of stubborn monks at the math temples. Compromise is no longer tolerated by today's revolutionary proponents of digitalism in math ed. They must have come to the conclusion that reactionary antidigital tendencies should be detected in infancy and crushed ruthlessly and decisively. I didn't know just how militant these folks were until very recently. My eyes were opened when a new homework grading system was considered for adoption here at the University of New Hampshire.

This elaborate structure, painstakingly created by the University of Rochester and in current use by several prestigious institutions, is called Webwork. It is expensive to set up, but the National Science Foundation will gladly entertain grant applications for starting it. I haven't myself dared to touch the stuff, but the director of the Math Centre here, no doubt a closet reactionary, has sampled it seriously. She was annoyed by the following exercise therein. I'll quote her directly; it should serve as a warning that the forces of reaction are doomed by historical necessity.

"It's from a section called 'Algebra2Powers.' One of the examples ..., which I find unfortunate has answer $-8/27$. That answer is labeled incorrect, while a decimal approximation to the fraction, -0.2963 , is accepted as correct."

The long-suffering masses shall soon be liberated from the insidious confines of superstitious mathematics.

Heydar Radjavi (Dalhousie)

Since some readers of the CMS Notes will not have seen the article on

the award of the CRM-Fields Prize to William Tutte in the June newsletter of the Fields Institute, may I be allowed to repeat a few facts from it for them?

First of all, like many mathematicians, Tutte's undergraduate education was in a different subject - in his case Chemistry - and he was drawn into mathematics by a problem in electrical networks. He developed, with three fellow students, the "sum of tree-products" method, which became a standard method in the subject.

He subsequently became heavily involved in code breaking during World War II at Bletchley Park. His work in breaking the "Tunny" code was characterized a few years ago in the *New Scientist* as "the greatest intellectual feat of the whole war". The algorithms he and two collaborators developed to decode Tunny were carried out on a computer "COLOSSUS" specially built for the purpose; it is considered by many to be the world's first electronic computer.

On a personal note, I first encountered Tutte in a first year geometry course in 1954 at the University of Toronto. I must confess that my memory of the course material has faded in the intervening years, but his quiet elegance as a teacher is still very vivid in my mind. And he has proved to be as well a leader in Canadian mathematics, with few peers in that regard. He was critical in the establishment of the University of Waterloo as a leader in the field of combinatorial mathematics, and contributed significantly to the larger enterprise of the Faculty of Mathematics there as well, helping to bring the University to its present prominence in Canada.

Carl Riehm (McMaster)

DU BUREAU DU PRÉSIDENT

(see page 1 for the English version)

Aperçu.

Comme vous le constaterez à la lecture des paragraphes ci-dessous, la Réunion d'été a connu un franc succès. Je commencerai toutefois par souligner que nous avons sélectionné les quatre lauréats qui recevront un prix à la Réunion d'hiver 2001 de la SMC, qui se tiendra du 8 au 10 décembre prochains à l'hôtel Toronto Colony, où nous serons les hôtes de l'Université York. Je vous présente sans plus tarder ces lauréats : Nathan Ng (UBC), Prix de doctorat; George Bluman (UBC), prix Adrien-Pouliot; Kai Behrend (UBC), prix Coxeter-James; Jim Timourian (Alberta), Prix pour services méritoires. En mon nom personnel et au nom de la Société, toutes mes félicitations aux élus.

Dans le numéro d'octobre des Notes de la SMC, à titre de vice-président du comité permanent de l'Union mathématique internationale (UMI) sur l'information et les communications électroniques, je vous donnerai des détails sur les projets de publication électronique de l'UMI.

Congrès international des mathématiciens.

L'organisation du prochain congrès de l'UMI, qui aura lieu à Beijing du 20 au 27 août 2002, va bon train. J'ai réussi à organiser une réception canadienne, dans le cadre du congrès, qui sera donnée à l'ambassade du Canada (édifice spectaculaire, à ce qu'on dit) par l'ambassadeur du Canada au Japon. La réception sera commanditée par la SMC et les trois instituts.

Réunion d'été de la SMC.

La Réunion d'été 2001 de la Société mathématique du Canada s'est déroulée du 2 au 4 juin à l'Université de la Saskatchewan. Nos Réunions, dont la qualité scientifique est devenue un standard que l'on tient maintenant pour acquis, sont toujours une excellente façon de nouer ou d'entretenir des amitiés au sein de la communauté mathématique.

Conformément à la formule habituelle, la Réunion comptait dix symposiums, des communications libres, quatre conférences principales et les conférences des lauréats des prix Jeffery-Williams et Krieger-Nelson. La conférence Jeffery-Williams a été prononcée par David Boyd, de l'Université de la Colombie-Britannique, second lauréat du prix Coxeter-James en 1979, et la conférence Krieger-Nelson, par Lisa Jeffrey, de l'Université de Toronto. Mentionnons aussi que le symposium sur la théorie des nombres était organisé en l'honneur de David Boyd, qui fête cette année son 60e anniversaire. Les quatre conférenciers principaux étaient : Georgia Benkart (Wisconsin), Zoe Chatzidakis (Paris 7), Geoffrey Grimmett (Cambridge) et Barry Simon (Caltech). M. De Witt Sumners (Florida State) a en outre donné une excellente conférence publique intitulée : «Calculating the secrets

of life: Mathematics in Biology and Medicine». Les dix symposiums, qui ont attiré un grand nombre de participants, portaient sur les sujets suivants :

Analyse harmonique abstraite (Org. : Anthony Lau, Université de l'Alberta, et Keith Taylor, Université de la Saskatchewan); Topologie géométrique (Org. : Alex Chigodize et Ed Tymchatyn, Université de la Saskatchewan); Théorie des graphes (Org. : Brian Alspach et Denis Hanson, Université de Regina); Théorie de Lie en dimension infinie et théorie de la représentation (Org. : Stephen Berman, Université de la Saskatchewan); Enseignement des mathématiques - Cognition et mathématiques (Org. : Florence Glanfield, Université de la Saskatchewan); Analyse matricielle (Org. : Judi MacDonald, Université de Regina); Algèbre en théorie des modèles (Org. : Bradd Hart, Université McMaster/Institut Fields, F.-V. Kuhlmann et S. Kuhlmann, Université de la Saskatchewan); Théorie des nombres (en l'honneur de David Boyd) (Org. : Peter Borwein, Université Simon Fraser, et Michael Bennett, Illinois); Études rigoureuses dans la mécanique statistique des modèles de réseaux (Org. : Chris Soteris, Université de la Saskatchewan, et Stu Whittington, Université de Toronto); Diffusion inverse et systèmes intégrables (Org. : Jacek Szmigielski, Université de la Saskatchewan).

Toutes les activités scientifiques de la Réunion se sont déroulées sur le campus de l'Université de la Saskatchewan. D'autres activités qui ont précédé la Réunion, la réception d'ouverture et le banquet ont eu lieu à l'hôtel Delta Bessborough. Le lunch des participants du samedi et le repas de dimanche et de lundi midi étaient compris dans les droits d'inscriptions, ce que les participants ont beaucoup apprécié.

Keith Taylor, directeur de la réunion, Christine Soteris, présidente du Comité d'organisation local, les organisateurs de séances ainsi que les autres collaborateurs du département de mathématiques local et du bureau administratif de la SMC ont droit à nos sincères remerciements. En somme, tant par le nombre de participants (285 participants, ce qui est excellent) que par sa qualité exceptionnelle, la Réunion d'été fut un franc succès.

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Autres activités récentes.

Voici maintenant certaines de mes autres activités récentes. J'essaierai, dans la mesure du possible, de ne pas répéter les éléments que Graham Wright a déjà abordés ou abordera dans les Notes.

Groupes de travail. Le long, mais productif examen de nos activités est maintenant terminé, et j'aimerais remercier toutes les personnes qui y ont participé. Pour consulter l'ensemble des recommandations, y compris le rapport du groupe de travail no 9, rendez-vous sur le

site Web de la SMC, (<http://www.cms.math.ca/-Projects/1998/futuref.html>). Bon nombre des recommandations qui s'y trouvent ont déjà été mises en oeuvre, et d'autres sont en voie de l'être. Par exemple :

Avancement des mathématiques. Suite à la recommandation d'un de nos groupes de travail, le *Comité pour l'avancement des mathématiques* vient de voir le jour. C'est à un sous-comité de ce nouveau comité que revient la recherche de financement. Les membres du Comité se sont mis au travail à la dernière Réunion d'été.

Publications. La SMC doit maintenant s'attaquer à la réorganisation de ses activités de publication. Nos publications continuent de faire bonne figure à une époque d'incertitude où le numérique gagne toujours en popularité, mais l'avenir nous semble moins clair d'une année à l'autre. Toutes les revues de la Société sont désormais entièrement en ligne. Elles ne demeureront toutefois pas à jour très longtemps, et nous nous sommes engagés à prendre des décisions très importantes *cette année*, notamment en réponse aux questions suivantes :

- Devrions-nous entreprendre la recherche d'un *directeur des produits et des services électroniques*? Si oui, voulons-nous un professeur bénévole, qui pourrait faire partie du Comité exécutif, ou un employé salarié?
- Devrions-nous entreprendre des activités de «recherche et de développement» pour nos services de publication et d'information, ou plutôt recourir davantage à la sous-traitance, en utilisant les presses de l'AMS ou du CNRC comme éditeur, ou encore seulement comme distributeur de publications électroniques?
- Comment intégrer au mieux nos publications électroniques et imprimées? Par conséquent, faut-il augmenter ou diminuer les ressources du bureau de rédaction TeX? Faut-il se doter d'un éditeur TeX associé et chercher activement d'autres débouchés tout en rattachant le responsable des publications électroniques au même service? Faut-il centraliser ou distribuer le travail? Doit-il se faire au sein d'un département ou dans le cadre d'un des instituts?

En octobre 2000, un sous-comité spécial (sous la présidence de Tom Salisbury) a été chargé d'approfondir la question. Les discussions initiales ont mené à l'élaboration d'un plan d'affaires (en cours), qui nous permettrait d'avoir une nouvelle structure de publication cohérente en janvier 2003. Je vous ferai part de nos décisions à ce sujet dans les prochains numéros des Notes.

Ouvrages et traités de la SMC. La SMC a maintenant terminé le transfert de la collection *Ouvrages de mathématiques de la SMC* de Wiley and Sons à Springer New York. Les dix premiers volumes sont déjà publiés ou en cours d'impression. Six titres étaient en vente à la Réunion d'été, et l'on continuera certainement de lire des critiques de ces ouvrages dans les Notes. En juin 2000, la SMC a lancé une collection parallèle d'ouvrages plus courts, les *Traités de mathématiques de la SMC*, qui seront publiés par l'American Mathematical Society, sous la direction de Ken Davidson et de Cam Stewart. Ces deux collections voient grand, et nous devrions inviter les membres d'autres sociétés mathématiques canadiennes à y publier leurs travaux. (Voir www.cms.math.ca/Publications/).

Forum national sur l'enseignement. Le conseil d'administration de la SMC a décidé d'organiser un forum national sur l'enseignement des mathématiques à Québec à l'automne 2002, ou au début de 2003 si la première option n'est pas réalisable. Le forum serait suivi d'une réunion à peu près neuf mois plus tard, en Ontario. Ces activités se veulent la continuité d'une activité qui a vu le jour à la réunion de Québec de 1995, présidée par Kathy Heinrich. Ces rencontres devraient rassembler environ 200 personnes de toutes les provinces et des territoires, qui représenteraient les groupes qui s'intéressent à l'enseignement des mathématiques à la fin du primaire et au secondaire (à peu près de la 6^e à la 12^e année) ou qui prennent part aux décisions s'y rapportant.

On souhaite que la première rencontre serve principalement à comparer les problèmes et les pratiques exemplaires de chacune des instances, ainsi qu'à cerner les sujets sur lesquels les sous-groupes pourront se pencher davantage à la seconde rencontre. On aimerait que les résultats de ces rencontres soient publiés sur le Web et sur papier, et qu'ils soient diffusés à grande échelle. Toute personne intéressée à participer à l'organisation de cette réunion est priée de communiquer avec moi. La SMC espère que ces forums et les liens qui s'y seront établis et renforcés lui permettront de jouer un rôle plus actif à titre d'intervenant et d'organisme central pour les questions relatives à l'enseignement des mathématiques.

Kabol. Une belle surprise en terminant : les pages «Knot a Braid of Links» du site Web de la SMC ont été choisies le 14 mai par Scientific American (www.scientificamerican.com) comme l'une des 50 meilleures ressources scientifiques sur le Web. Comme vous êtes sûrement nombreux à le savoir, Kabol ajoute un nouveau site mathématique par semaine à son répertoire depuis 1996 (l'âge de pierre du Web!). Toutes nos félicitations vont particulièrement à Bob Rosebrugh, qui a créé Kabol, et à Nathalie Sinclair, qui en est responsable depuis trois ans.

CMS TRACTS IN MATHEMATICS TRAITÉS DE MATHÉMATIQUES DE LA SMC

The Canadian Mathematical Society is pleased to announce the launch of a *new* series of short monographs and lecture notes:

La Société mathématique du Canada est fière d'annoncer le lancement de sa nouvelle collection de courtes monographies et de notes de cours :

Editors / Directeurs de collection :
K.R. Davidson and / et C.L. Stewart
Department of Pure Mathematics
University of Waterloo
Waterloo, ON N2L 3G1
tracts-editors@cms.math.ca

The CMS Tracts in Mathematics will consist of original monographs of about 150 to 200 pages giving an exposition of a research topic of current interest, or lecture notes for an advanced graduate level course.

The Editors encourage potential authors to contact them at an early stage. Final manuscripts should be submitted to the Editors for consideration. Authors of accepted manuscripts will be expected to provide a LaTeX file using the series style file, available from the CMS TeX Office (tex-editor@cms.math.ca).

The series is a joint publication with the American Mathematical Society. Volumes will be paperbound. The final TeX files will be produced by the CMS, and the books will be printed and distributed by the AMS.

Les Traités de mathématiques de la SMC seront des ouvrages origi-

inaux de 150 à 200 pages portant sur des domaines de recherche d'intérêt actuel, ou encore des notes de cours pour le deuxième ou le troisième cycle.

Les directeurs de la collection encouragent les auteurs potentiels à communiquer avec eux le plus tôt possible. Les directeurs procéderont à l'examen des textes finaux qui leur seront soumis. Les auteurs de textes acceptés devront remettre leur document en format LaTeX, composé à l'aide du fichier de style de la collection, qu'ils pourront se procurer au bureau de rédaction TeX de la SMC (tex-editor@smc.math.ca).

Les ouvrages de la collection, publiée en collaboration avec l'American Mathematical Society (AMS), seront des volumes brochés (à couverture souple). La SMC se chargera de préparer les fichiers TeX définitifs, et l'AMS, de l'impression et de la distribution des livres.

EDUCATION NOTES

Ed Barbeau and Harry White, Column Editors

The Canada-Wide Science Fair of 2001

The Canada-Wide Science Fair was held at Queen's University during the week of May 12-20, 2001. The students compete at one of three levels (junior, intermediate and senior) and in one of six divisions (biotechnology; computing and mathematical sciences; earth and environmental sciences; engineering; life sciences; physical sciences). In addition, they may qualify for special awards. One of our colleagues, Ole Nielsen of Queen's University, was a member of the overall Judging Committee.

Three of these special awards, one at each level, are awarded by the Canadian Mathematical Society for "outstanding projects related to the mathematical sciences or that make extensive use of mathematics"; the prizes are \$500 (senior), \$300 (intermediate), \$200 (junior). The judging was done by Ed Barbeau of the University of Toronto, Susan Cooper of Queen's University, Pierre Gravel, Lucien Haddad both of the Royal Military College, Morris Orzech of Queen's Uni-

versity and David Wehlau of the Royal Military College. As there were eight junior, nine intermediate and sixteen senior candidates, including one French at each of the junior and senior levels, the judges split into three teams of two to do a preliminary assessment, and then all reviewed the best ones before reaching a consensus. Four of the junior, one intermediate and four of the senior candidates seemed to fall within the guidelines for the CMS Awards.

The winners of the CMS Awards are as follows:

Senior Award: **Robyn Maler**, Wavelets and brain rhythms.

Intermediate Award: **Yichuan Wang**, Math challenge: the card game of 24.

Junior Award: **Mahmoud Bazargan**, Calculating the number of triangles.

The senior project compared the more efficient wavelet technique for harmonic analysis of brain waves with the Fourier technique.



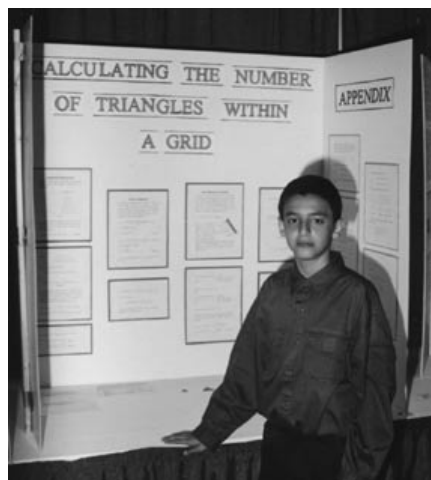
Robin Maler

The intermediate project was a combinatorial study of the possible ways of making up the result 24 by inserting brackets and arithmetic symbols into a string of four numbered cards.



Yichan Wang

The junior award was an empirical investigation of the number of integer equilateral triangles to be found in a triangular array of unit equilateral triangles, followed by proofs.



Mahmoud Bazargan

Some of the exhibits are remarkable and a few might do credit to a university graduate student, so it is excellent that the Canadian Mathematical Society be among those offering them encouragement. It is conceivable that it might do so more effectively as a sponsor of the division for mathematics and computing sciences in conjunction with other mathematical organizations, including the research institutes. Since multiple gold, silver and bronze awards are given in the divisions, the cost of sponsorship would be beyond the resources of any one organization. However, to have Canadian mathematical science organizations united under the umbrella perhaps of the research institutes would help regularize the judging and ensure that the best projects do indeed receive the largest prizes.

CabriWorld II

L'UQÀM et le GRMS ont accueilli CabriWorld II du 14 au 17 juin à Montréal. Plus de 400 personnes venant de 25 pays ont assisté à ce congrès. Cette rencontre se voulait une occasion de connaître les derniers développements de Cabri géomètre. Durant les quatre jours, nous avons eu droit à 9 conférences plénières, 10 conférences, près de 80 ateliers et à 14 mini-cours répartis en 3 sessions. Parmi les activités auxquelles j'ai pu assister et qui ont particulièrement attirer mon attention, j'aimerais souligner deux conférences plénières. Charles Vonder Embse (États-Unis) nous a montré de façon éloquent plusieurs possibilités de Cabri dans des applications autres que celles de la géométrie plane telles que l'algèbre, la géométrie analytique, le calcul, la trigonométrie. Pour sa part, Jen-Chung Chuan (Taïwan) a traité magistralement de constructions géométriques à l'aide d'un compas seulement. Il a donné des exemples se rapportant aux coniques, aux épicycloïdes, aux hypocycloïdes, à la lemniscate de Bernoulli, à la courbe de Bowditch.

Parmi les ateliers auxquels j'ai pu participer, je retiens celui des professeurs Jorge et Tavares (Brésil) sur des images virtuelles et tridimensionnelles (re : la technologie IMAX 3D)

obtenues en utilisant des projections centrales avec variations dans l'inclinaison du plan et ses propriétés homographiques et anaglyptiques (stéréographiques) par le biais du logiciel Cabri en tant qu'outil pour l'étude de la géométrie spatiale.

Jean-Marie Laborde, auteur et prometteur du logiciel Cabri, nous a informé avec preuves à l'appui de deux développements importants de Cabri. Très bientôt, une version de Cabri adaptée à la TI-83 Plus sera disponible pour ce modèle de calculatrice. De plus, une équipe travaille actuellement sur une version 3D de Cabri, ce qui devrait donner naissance à Cabri III. Somme toute, CabriWorld II a permis d'apprécier le vaste éventail d'applications de ce logiciel répandu à travers le monde à plus de 25 millions de copies.

University of Regina website

Math Central, <http://MathCentral.uregina.ca/>, is a collection of Internet services designed for teachers and students of mathematics from kindergarten to grade twelve. These services include a database of teaching resources, a question and answer service, a mailing list for teachers, links to other sites such as provincial mathematics teacher organizations, and a problem of the month.

The project was initiated in September 1995 at the University of Regina by **Denis Hanson** and **Harley Weston** from the Department from Mathematics and Statistics, and **Mhairi (Vi) Maeers** from the Faculty of Education. It was prompted by the introduction of a new mathematics curriculum in the Province of Saskatchewan which has a problem solving, resource based approach.

Math Central has grown and changed significantly in the intervening six years. It currently receives almost 14,000 hits per day, a relatively small proportion of which are from Saskatchewan. The users are teachers and students in the K-12 system, education students and faculty, parents, home schoolers and the general public.

The part of the site that receives the majority of the hits is the Resource Room where the teaching resources are located. They are stored in a database that can be browsed by curriculum strand or searched by keyword or author. The site can be navigated in both English and French and approximately 10% of the resources are in French. Most of these resources are written by teachers, both inservice and preservice. Student projects in mathematics methods classes in the Faculty of Education at the University of Regina have been transformed into resources in our database. The Resource Room also contains a mathematics glossary at the middle level in English and the elementary and middle levels in French.

Although the Resource Room receives the majority of the activity it is *Quandaries and Queries*, a question and answer service, that requires the most attention. The questions received are forwarded to the Quandaries and Queries Consultants - an email list currently composed of twelve faculty and students from three universities and two teachers in the K-12 system. Input from the consultants is formulated into a re-

sponse that is posted into a database and the questioner is sent an email message indicating how to locate the response. The database of questions and answers is searchable by anyone visiting the site.

In January of 2001, **Chris Fisher** volunteered to maintain a problem of the month on Math Central. A new problem, and solutions to the previous problem, are posted near the first of every month in English, French and Spanish.

Other services at Math Central include a mailing list for teachers called Teacher Talk, and the Bulletin Board where links are provided to provincial mathematics teacher organizations and to newsletters and periodicals that might be of interest to students and teachers.

Visit Math Central and wander around the site. If you or any of your students have school or university level mathematics material that you would be willing to contribute to the Resource Room, or if you would like to be added to the Quandaries and Queries Consultants list email TheCentralizer@MathCentral.uregina.ca. Math Central continues to grow and change. Volunteers, and ideas and suggestions for additional services and links are always welcome.

Judith McDonald, Harley Weston

Teaching honoured in Kingston

Our colleagues across the country continue to be well-represented among those receiving teaching awards in competitions with lecturers from across the spectrum. At the Royal Military College in Kingston, the Mathematics and Computer Science Department has been honoured twice in a row. The *RMC Class of 1965 Teaching Excellence Award* has been given annually since 1991 to one professor of the college, who has been nominated by students and voted on by a committee comprised of students, faculty and a representative of the Class of 1965.

The Award for 2000 went to **Dr. Lucien Haddad**. He is cited as a demanding, yet inspirational teacher, whose enthusiasm for mathematics is coupled with a sincere concern for the welfare of his students. He provides class examples that are relevant and interesting and routinely goes out of his way to accommodate the special needs of individual students. He took his doctorate at the Université de Montréal in 1987 with a thesis on universal algebra and discrete mathematics supervised by Ivo Rosenberg. After brief stints at the Universities of Waterloo and Toronto, he joined the staff of RMC in 1991.

The winner of the award for 2001 is **Lieutenant-Commander Pierre Langlois**. He is noted for his compassionate accessibility to students and his deep knowledge as well as thorough and resourceful presentation of the material he teaches. He graduated from RMC in 1990 with a degree in electrical engineering, placing first in his class and receiving the Governor General's Silver Medal. After receiving further qualifications in a succession of shore and sea installations, he returned to the college in 1997 to take a Master's degree.

Currently, an assistant professor of mathematics and computer science, he is working part time towards a doctorate in computing engineering.

Also last year, at Queen's University, **Dr. Leo Jonker** received the Queen's Alumni Teaching Award.





Developing the CMS Web Site

The website of the Canadian Mathematical Society is already a resource for problems for promising mathematics students, particularly those with ambitions to do well in competition. However, it can be of service to the mathematical community in other ways as well. One of these is the provision of information about careers open to mathematics grad-

uates, with some profiles of recent graduates. The second is the offering of advice to students about difficulties they may face in studying mathematics, and providing them with commentaries and criticisms of solutions to problems. I hope in the next few months to move ahead on both these fronts, but would like the help of the reader in providing me with and directing me to material. In particular, I have learned about websites that are already available and could be linked to that of the CMS, and hope to write about some of these in future issues; if you are involved in some interesting project, please drop me a line and let me know about it (E. Barbeau at barbeau@math.utoronto.ca).

AMERICAN MATHEMATICAL SOCIETY

Conference Proceedings, Canadian Mathematical Society

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

Representations of Groups
Bruce N. Allison and Gerald H. Cliff, Editors
Representations of Groups contains papers presented at a Canadian Mathematical Society Annual Seminar. The material addresses representations of Lie groups, algebraic groups, finite groups, and quantum groups and the relationships among these areas. With both survey and research articles, this book offers the latest results on various aspects of representation theory of groups. *Conference Proceedings, Canadian Mathematical Society, Volume 16, 1995; 385 pages; Softcover; ISBN 0-8218-0311-5; List \$110; Individual member \$66; Order code CMSAMS/16CMS01*

Trends in Ring Theory
Vlastimil Dlab, Carleton University, Ottawa, ON, Canada, and László Márki, Hungarian Academy of Sciences, Budapest, Hungary, Editors
 The Ring Theory Conference (University of Miskolc, Hungary) successfully accomplished its two goals: 1) to reflect contemporary trends in the subject area and 2) to offer a meeting place for a large number of Eastern European algebraists and their colleagues from around the world. Particular emphasis was placed on recent developments in the following four areas: representation theory, group algebras, PI algebras, and general ring theory. This book presents 13 of the invited lectures. *Conference Proceedings, Canadian Mathematical Society, Volume 22; 1998; 239 pages; Softcover; ISBN 0-8218-0849-4; List \$49; Individual member \$29; Order code CMSAMS/22CMS01*

Harmonic Analysis and Number Theory
Papers in Honour of Carl S. Herz
S. W. Drury, McGill University, Montreal, PQ, Canada, and M. Ram Murty, Queen's University, Kingston, ON, Canada, Editors
 This volume presents the proceedings of a conference on "Harmonic Analysis and Number Theory" held at McGill University (Montreal). The papers are dedi-

cated to the memory of Carl Herz, who had deep interests in both harmonic analysis and number theory. These two disciplines have a symbiotic relationship that is reflected in the papers in this book. *Conference Proceedings, Canadian Mathematical Society, Volume 21; 1997; 227 pages; Softcover; ISBN 0-8218-0794-3; List \$49; Individual member \$29; Order code CMSAMS/21CMS01*

Seminar on Fermat's Last Theorem
V. Kumar Murty, University of Toronto, ON, Canada, Editor
Anyone who wants to study the proof of Wiles and Taylor-Wiles will find these proceedings valuable and helpful.
 —*Monatshefte für Mathematik*


The most significant recent development in number theory is the work of Andrew Wiles on modular elliptic curves. Besides implying Fermat's Last Theorem, his work establishes a new reciprocity law. Reciprocity laws lie at the heart of number theory. Wiles' work draws on many of the tools of modern number theory and the purpose of this volume is to introduce readers to some of this background material. Based on a seminar held during 1993–1994 at the Fields Institute for Research in Mathematical Sciences, this book contains articles on elliptic curves, modular forms and modular curves, Serre's conjectures, Ribet's theorem, deformations of Galois representations, Euler systems, and annihilators of Selmer groups. All of the authors are well known in their field and have made significant contributions to the general area of elliptic curves, Galois representations, and modular forms.

Features:

- Brings together a unique collection of number theoretic tools.
- Makes accessible the tools needed to understand one of the biggest breakthroughs in mathematics.
- Provides numerous references for further study.

Conference Proceedings, Canadian Mathematical Society, Volume 17; 1995; 265 pages; Softcover; ISBN 0-8218-0313-1; List \$49; All AMS members \$39; Order code CMSAMS/17CMS01

To order, call: 1-800-321-4AMS (4267), in the U.S. and Canada, or 1-401-455-8000; fax: 1-401-455-4046; email: cust-serv@ams.org. Visit the AMS Bookstore and order online at www.ams.org/bookstore. Or write to: American Mathematical Society, P. O. Box 6248, Providence, RI 02940-6248.



AMS
 AMERICAN MATHEMATICAL SOCIETY

OBITUARIES / AVIS DE DÉCÈS



**Ray Vanstone
(1933-2001)**

Ray Vanstone, Professor Emeritus of Mathematics at the University of Toronto, died suddenly of a heart attack on April 9th at his winter home in Florida.

James Ray Vanstone, born on August 12, 1933 near Owen Sound, Ontario, obtained both his bachelor's and master's degrees in mathematics at the University of Toronto, and in 1959 gained his Ph.D. at the University of Natal, in South Africa. His thesis, *Generalized metric differential geometry*, was completed under the direction of Hanno Rund.

In 1959, he came to the University of Toronto as a lecturer in mathematics. Two years later, he became Assistant Professor, and then in 1965 was promoted to the rank of Associate Professor with tenure. In 1973, he became Professor of Mathematics, and retired from the department in 1995. His career was punctuated by visiting appointments to Flinders University of South Australia, the University of Arizona, ETH in Zurich, Switzerland, the University of Western Australia in Perth and the University of Mannheim in Germany.

His chief contribution in mathematical research came from a collaboration with Werner H. Greub and Stephen Halperin, colleagues at the University of Toronto. During the 1970s, the

three collaborated on a substantial and well-regarded three-volume set, *Connections, curvature, and cohomology*, published by Academic Press, a major source of mathematical research titles. He wrote, sometimes in collaboration with colleagues, papers in multilinear algebra and on differential geometry as it relates to relativity.

The Canadian Mathematical Society (formerly, Canadian Mathematical Congress) benefited from his service in many ways. He was the managing editor of its *Bulletin* from 1965 to 1967, and of its *Journal* from 1983 to 1988. He served on its Council for two terms, 1969-1972 and 1981-1983, chaired the program committee for its biennial seminar in 1971, and edited its proceedings.

He was well-liked by his colleagues in the mathematics department, which he served loyally in a number of ways, as associate chairman in 1970-1975, as secretary to the trustees of the Samuel Beatty Fund in 1980-1995, as a teacher not only on the St. George campus but also at the Erindale and Scarborough campuses, as a coordinator of large-enrolment courses for engineering, as a supervisor of graduate and undergraduate students, and as regional coordinator for Ontario for the Mathematical Association of America's *American High School Mathematics Examination*. A number of his students were profoundly influenced by his teaching and went on to become distinguished mathematicians.

Professor Vanstone is survived by his wife, Ann, of forty years, his daughters, Brenda and Kirsten, his sons, Jonathan and Roderick, and five grandchildren.

Reminiscences of Ray Vanstone

As a mathematician Ray was a perfectionist. He was never fully satisfied with a piece of work unless it

met his high standard of mathematical rigor and full generality. As a teacher he was a major inspiration to many of his undergraduate students, some of whom went on to become distinguished mathematicians elsewhere. One name comes to my mind: Jerry Marsden, who is now a professor at Caltech. When Marsden accepted a rather prestigious prize from the American Mathematical Society he mentioned Ray Vanstone as the most influential teacher he had at the U of T.

Towards his colleagues and friends Ray was generous almost to a fault. He would go out of his way to help them whenever he felt it was necessary.

Ray had several interests outside his profession. He had a passion for science fiction – had a huge collection of Sci-Fi books. He was interested in ancient cultures and ancient languages (such as latin and sanskrit). With Ray even a simple conversation would almost always turn into a serious discussion of non-trivial matters.

In Ray Vanstone the department has lost one of its most valuable members and I personally have lost a loyal friend.

— Dipak Sen (Toronto)

Ray Vanstone has been my friend and colleague in the Mathematics Department since 1955, when I came to Toronto as a PhD student. Ray was a Master's student who had already been here as an undergraduate. Being both interested in geometry, we were together in a number of classes, including courses by Donald Coxeter and Hanno Rund. There was no question that Ray had unusual mathematical talent; that was obvious, without his being the least bit arrogant or offensive about it. There was no question either that he kept well informed on current political and social issues, and he was not afraid to speak his mind on these topics. His conversation was well reasoned, but unlike some

of us who perhaps did not hesitate to express unfavourable personal opinions, Ray was always polite. Ray and Ann both took great interest in the social life of the department. Their many acts of kindness to visitors and colleagues, and their families, went far beyond simple human civility.

— *Arthur Sherk (Toronto)*

The time: September, 1959. The place: a lecture room on the top storey of the cloister wing of University College, in traditional mathematics department territory. A small group of fourth year honours students wait to begin their differential equations course, the text, Coddington and Levinson. The lecturer rushes in, somewhat agitated. Someone new. A young, well-dressed man with a dark beard, who already in his prime can write on the blackboard

as fast as any of the veterans in the department. This was my first introduction to Ray Vanstone. His lectures were very well prepared and organized, and adhered very much to the transmission standards of the time. But he was also very friendly - after all, only about five years separated him from his students.

The following summer, attending the Summer Research Institute organized by the Canadian Mathematical Congress in Kingston, I took to bumming a lift with various participants, George Duff, Rod Ross or Ray. Ann and his very young son Jonathan were there as well, and we would travel with the Vanstone family in the front seat and me in the back; not an approved way of travelling with a baby today. Ray and Ann were clearly a couple who enjoyed life, each other and their young child.

Ray's contribution to the weal of the world was not through big causes, but in numerous acts of kindness and

consideration to his students, staff and colleagues. Ray was a thoroughly decent man, in the highest meaning of this term: thoroughly devoid of any meanness, a man who valued the important things of life, whose family is his most enduring monument. We are all diminished by his passing.

— *Edward Barbeau (Toronto)*

I knew Ray Vanstone as a teacher, friend, colleague and mentor. His integrity, generosity, devotion to his students and passion for mathematics made him a fine role model for a beginning faculty member. He was completely dedicated to the University and to the Canadian mathematical community, and served both selflessly and tirelessly. He will be missed.

— *Steve Halperin (Toronto)*



**Patrick Stewart
(1944–2001)**

Dr. Patrick Noble Stewart, 57, retired professor of Mathematics at Dalhousie University, died on Sunday, April 15 at Halifax, Nova Scotia.

Pat Stewart was born in Montreal, PQ, April 12, 1944, son of the late He-

len Leona (Hidinger) and Charles Noble Stewart. He grew up in Hodgeville, Saskatchewan, attended Royal Roads Academy, graduated first class honours from the University of British Columbia; Masters, University of California at Berkeley (Woodrow Wilson Fellow); Ph.D under N.J. Divinsky at the University of British Columbia; Post-Doctoral Studies at the University of Glasgow, Scotland. He began his career at the University of South Australia, Adelaide and joined the faculty at Dalhousie University in 1972. His career included terms as Department Chair, Atlantic Vice-President of the Canadian Math Society and President of the International Jury for the 36th International Mathematical Olympiad. He was widely published in collaboration with national and international colleagues. He was honoured as the first recipient of the Faculty of Science Ex-

cellence in Teaching Award, 1991 and chaired the Mathematics and Statistics group for the Atlantic Provinces Inter-University Committee on the Sciences. His service to the University Community included executive responsibilities with the Dalhousie Faculty Association and work towards improving the instruction of Mathematics in Nova Scotia High Schools, particularly for disadvantaged and minority youth.

He is survived by his wife Margaret Jane (Tomkins) of Ottawa, sons Jeffrey, Robin and Riley, and his brother John of Gibsons, British Columbia and sister Lorna of Edmonton, Alberta.

Donations to the Dalhousie University Department of Mathematics and Statistics in memory of Pat Stewart will be gratefully accepted, to support student activities such as graduate student conferences and undergraduate research projects.

CMS Winter Meeting 2001
Toronto Colony Hotel
89 Chestnut Street, Toronto, Ontario
December 8 - 10, 2001

First Announcement

On behalf of the York University, the Department of Mathematics and Statistics extends a warm welcome to all participants in the Winter 2001 Meeting of the Canadian Mathematical Society (CMS).

Following the usual format, the meeting will include eight symposia, contributed papers, six plenary speakers, as well as the Coxeter-James and CMS Doctoral Prize lectures. The Society's Adrien Pouliot Prize will also be awarded. Organizers are also planning a public lecture by Katherine Heinrich of the University of Regina.

All pre-meeting activities and scientific talks will be held at the Toronto Colony Hotel, 89 Chestnut Street, in the heart of Toronto, Ontario.

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/winter01>

Meeting registration forms and hotel accommodation forms is published in the September 2001 issue of the *CMS Notes* and are also available on the website, along with on-line forms for registration and submission of abstracts.

Public Lecture

Katherine Heinrich (University of Regina)

Plenary Speakers

Martin Golubitsky (University of Houston)

Masaki Kashiwara (RIMS, Kyoto University)

John Ockendon (Oxford University)

David Pimm (University of Alberta)

Richard Schoen (Stanford University)

Dan Voiculescu (University of California, Berkeley).

Prizes and Awards

The **CMS Coxeter-James Lecture** will be given by **Kai Behrend**, University of British Columbia.

The **CMS Doctoral Prize Lecture** will be given by **Nathan Ng**, University of Georgia.

The **CMS Adrien Pouliot Prize** will be awarded to **George Bluman**, University of British Columbia.

The **CMS Distinguished Service Award** will be presented to James Timourian, University of Alberta, at the Delegates' Luncheon.

Symposia

By invitation of the Meeting Committee, there will be symposia in the following areas. Here is the preliminary list of speakers.

Dynamics and Symmetry

(Org: **Bill Langford**, Guelph University and
Jianhong Wu, York University)

See Related Activities section for information on satellite meetings planned for this topic.

Jacques Bélair (Montreal), Sue Ann Campbell (Waterloo), Yuming Chen (Wilfrid Laurier), Florin N. Diacu (Victoria), Benoit Dionne (Ottawa), Wieslaw Krawcewicz (Alberta), Maciej Krupa (New Mexico State), Victor G. LeBlanc (Ottawa), George W. Patrick (Saskatchewan), Shigui Ruan (Dalhousie), Xiaogiang Zhao (Memorial), Xingfu Zou (Memorial).

Free Probability

(Org: **Alexandru Nica**, University of Waterloo)

See Related Activities section for information on satellite meetings planned for this topic.

Marek Bozejko (Wroclaw), Man-Duen Choi (Toronto), Ken Davidson (Fields Institute), George Elliott (Toronto), Uwe Franz (Greifswald), Fred Goodman (Iowa), Mourad Ismail (Southern Florida), Vojkan Jaksic (Ottawa), Palle Jorgensen (Iowa), Marius Junge (Illinois - Urbana), Claus Koestler (Queen's), David Kribs (Iowa), Michael Lamoureux (Calgary), Franz Lehner (Graz, Austria), James Mingo (Queen's), Gelu Popescu (Texas - San Antonio), Ian Putnam (Victoria), Zhong-Jin Ruan (Illinois - Urbana), Piotr Sniady (Texas A&M), Stanislaw Szarek (Case Western Reserve), John Toth (McGill), Quanhua Xu (Besancon, France).

History of Mathematics

(Org: **Richard O'Lander** and **Ronald Sklar**,
 St. John's University, N.Y.)

Speakers to be announced.

Industrial Mathematics

(Org: **Huaxiong Huang**, York University)

See Related Activities section for information on satellite meetings planned for this topic.

Chris Budd (Bath), Ian Frigaard (UBC), Tim Myers (Cape Town), Keith Promislow (SFU), David Ross (Kodak), Donald Schwendeman (Renselaer Polytechnic Institute), Brian Wetton (UBC).

Kac-Moody Lie Theory and Generalizations

(Org: **Nantel Bergeron, Yun Gao,**
and **Geanina Tudose** York University)

Bruce Allison (Alberta), Stephen Berman (Saskatchewan), Vjayanthi Chari (California - Riverside), Chongying Dong (California - Santa Cruz), Naihuan Jing (North Carolina State), Seok-Jin Kang (Seoul National), Kailash Misra (North Carolina State), Erhard Neher (Ottawa), Arturo Pianzola (Alberta), Anne Schilling (California - Davis), Mark Shimozone (Virginia Tech), Weiqiang Wang (North Carolina State).

Moonshine

(Org: **Christopher Cummins**, Concordia University)

Speakers to be announced.

Nonlinear and Geometric Analysis

(Org: **Robert McCann**, University of Toronto)

See *Related Activities* section for information on satellite meetings planned for this topic.

Speakers to be announced.

Mathematical Education

(Org: **Pat Rogers**, University of Windsor, **Kathy Kubota-Zarivnij**, and **Walter Whiteley**, York University)

Presentations and Discussion on *Mathematicians learning from Mathematics Educators*. Those interested in formally participating should contact whiteley@mathstat.yorku.ca

Contributed Papers Session

(Org: **Stanley Kochman**, York University)

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, 2001**. 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-winter01@cms.math.ca.

Applicants must be bona fide graduate students, at a Canadian or other University. To apply for this funding, please have a letter written by your Supervisor or departmental Graduate Advisor, briefly answering the following: Name of Student, Area of study and level, How will the student benefit from the meeting? Will the student be speaking? What support is available from local sources or grants, for this student?

Please have this sent before **October 31, 2001**. This letter may be emailed to gradtravel-winter01@cms.math.ca. Applicants will be notified early in November of the funding decision. If successful, the student will receive a cheque for reimbursement of expenses upon completion and submission of the standard Travel Expense Claim Form, along with appropriate original receipts.

Related Activities

Symposium on Nonlinear and Geometric Analysis: The University of Toronto will host a one day symposium entitled *Nonlinear and Geometric Analysis* on Friday December 7. For more information, please contact Robert McCann, University of Toronto at mccann@math.toronto.edu

Workshop on Computational Challenges in Dynamical Systems: The Fields Institute will host this special workshop from Monday, December 3 to Friday, December 7. For more information, please consult the Fields website at <http://www.fields.utoronto.ca/programs/scientific/01-02/numerical/dynamics/>

Workshop on Free Probability and Random Matrices: The Fields Institute will host this workshop from Thursday, December 6 to Friday, December 7. For more information, please contact the organizers, Alexandru Nica (Waterloo) at anica@math.uwaterloo.ca or Roland Speicher (Queen's) at speicher@mast.queensu.ca

Mathematical Modelling Day: The Fields Institute will host a Mathematical Modelling Day on Tuesday, December 11. For more information, please contact Huaxiong Huang (York) at hhuang@yorku.ca

Social Events

A **welcoming reception** will be held Friday, December 7, from 7:00 to 9:00 p.m. in the Terrace Room of the Toronto Colony Hotel.

The **Delegates' Luncheon** will be held on Sunday, December 9, from 12:00 to 2:00 p.m. in the Centre and West Colony Grande Ballroom of the Toronto Colony Hotel. A ticket to this luncheon is included in all registration fee categories.

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 Thursday, December 6, from 6:00 to 9:00 p.m. in the Carlton Room of the Toronto Colony Hotel.

The **CMS Development Group Luncheon** will be held from 11:00 a.m. to 1:00 p.m. on Friday, December 7 in the Elm Suite of the Toronto Colony Hotel.

The **CMS Board of Directors Meeting** will be held from 1:30 to 6:30 p.m. on Friday, December 7 in the Armoury Suite of the Toronto Colony Hotel.

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/winter01>.

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 **October 15, 2001**. 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/winter01>.

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, 2001.

Registration

The registration form will appear in the **September 2001** issue of the *CMS Notes* and are also available from:

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://www.cms.math.ca/CMS/Events/winter01/forms.html>
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 IN OTTAWA on or before November 1 in order to qualify for reduced rates**. In order for your payment to be processed before the meeting, it should be received by November 28.

	Before Nov 1	After Nov 1
Delegate's Luncheon included		
Plenary speakers/prize lecturers	\$ 0	\$ 0
Session speakers	200	200
Organizers	135	135
Non-members	400	520
CMS/AMS/MAA members with grants	270	350
CMS/AMS/MAA members without grants	135	175
One-day fee	135	175
Postdocs, retired	100	130
Students, unemployed	50	65

CMS = Canadian Mathematical Society
AMS = American Mathematical Society
MAA = Mathematical Association of America

Refund Policy

Delegates wishing to cancel their registration must notify the CMS Executive Office **in writing before November 28** 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 the deadlines specified below. Reservations not made by that date will be on a request only, space available basis. Rates are per room, per night and are quoted in Canadian dollars.

Reservation Deadline: November 5, 2001

Toronto Colony Hotel

89 Chestnut Street, Toronto, Ontario M5G 1R1
Check-in: 4:00 p.m.; Check-out: 12:00 noon
Applicable taxes: GST (7%), PST (5%)
Deadline: November 5, 2001 Group Code: Mathematic
Phone: 416-977-0707 toll-free: 800-387-8687
FAX: 416-585-3157 <http://www.toronto-colony.com>

Rates: \$102, single/double occupancy
\$117, triple occupancy
\$132, quadruple occupancy
Other room types are also available.
(Children 18 yrs old and under sharing parents' accommodation are complimentary.)
(Children 12 yrs old and under eat for free from the children's menu if accompanied by parents.)

Metropolitan Hotel

108 Chestnut Street, Toronto, Ontario M5G 1R3
Check-in: 3:00 p.m.; Check-out: 12:00 noon
Applicable taxes: GST (7%), PST (5%)

Deadline: November 5, 2001**Group Code: Cdn Math Society**

Phone: 416-977-5000 FAX: 416-977-9513

Email: reservations@metropolitan.com

<http://www.metropolitan.com>

Rates: \$145, single/double occupancy
(Children 18 yrs old and under sharing parents' accommodation are complimentary.)

Best Western Primrose Hotel

111 Carlton Street, Toronto, Ontario M5B 2G3

Check-in: 4:00 p.m.; Check-out: 11:00 a.m.

Applicable taxes: GST (7%), PST (5%)

Deadline: November 5, 2001 Group Code: 3766

Phone: 416-977-8000 toll-free: 800-268-8082

FAX: 416-977-6323 <http://www.torontoprिमrosehotel.com>

Rates: \$89, single/double occupancy
\$99, triple occupancy
\$109, quadruple occupancy
(Children 16 yrs old and under sharing parents' accommodation are complimentary.)

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 **Toronto Colony Hotel**, reservations must be accompanied by a first night's room deposit or be guaranteed with a major credit card. Cancellations received less than 48 hours prior to arrival will be charged to the credit card.

For the **Metropolitan Hotel**, reservations will be held until 4:00 p.m. on the day of arrival unless guaranteed by a first night deposit, or major credit card guarantee. Should a guaranteed reservation not be cancelled by 4:00 p.m. on the day of arrival, the cost of the room for the first night will be charged to the guarantor.

For the **Best Western Primrose Hotel**, reservations will be held until 4:00 p.m. on the day of arrival unless guaranteed by a first night deposit, or major credit card guarantee. Should a guaranteed reservation not be cancelled by 4:00 p.m. on the day of arrival, the cost of the room for the first night will be charged to the guarantor.

Child Care

The following information was provided by the three meeting hotels. Advance research and arrangements are recommended.

The Toronto Colony Hotel recommends the firm of Improv Care. Please contact Patti MacDenna at 416-243-3285.

At the Metropolitan Hotel, arrangements may be made by contacting the Concierge. Please allow at least 48 hours notice.

The Best Western Primrose Hotel recommends the firm of Christopher Robbins, 416-483-4744 (after 4:30 pm, please call Mrs. Redden at 416-439-1883).

Travel

The City of Toronto: Detailed information regarding York University and the City of Toronto, including tourism information, local weather and climate, car rental information, site and street maps, and suggested One Day Itineraries for self-guided tours, are available at the websites:

<http://www.yorku.ca/><http://www.math.utoronto.ca/toronto/><http://weather.ec.gc.ca/forecast/yyz.html>http://www.toronto.com/Toronto/Tourism_Toronto/

Parking: Delegates staying at the Toronto Colony Hotel may park for \$14.00 per day, with full in and out privileges.

Delegates staying at the Metropolitan Hotel may park for \$19.00 per day for self parking or \$24.00 per day for valet parking. Both choices include full in and out privileges.

Parking at the Best Western Primrose Hotel is limited but may be available for \$15 per day, with full in and out privileges.

Acknowledgements

Support from the following is gratefully acknowledged:

- York University, Department of Mathematics & Statistics
- 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)

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: Tom Salisbury (York)
Nantel Bergeron (York), Christopher Cummins (Concordia), Yun Gao (York), Huaxiong Huang (York), Kathy Kubota-Zarivnij (York), Bill Langford (Guelph), Robert McCann (Toronto), Alexandru Nica (Waterloo), Richard O'Lander (St. John's, N.Y.), Pat Rogers (Windsor), Ronald Sklar (St. John's, N.Y.), Geanina Tudose (York), Walter Whiteley (York), Jianhong Wu (York), Graham Wright (CMS ex-officio).

Local Arrangements Chair: Juris Steprans (York)
Nantel Bergeron (York), Monique Bouchard (CMS ex-officio), Stanley Kochman (York).

Réunion d'hiver de la SMC

Hôtel Toronto Colony

89, rue Chestnut, Toronto (Ontario)

8-10 décembre 2001

Première annonce

Au nom de l'Université York, le département de mathématiques et de statistique souhaite cordialement la bienvenue à tous les participants à la Réunion d'hiver 2001 de la Société mathématique du Canada.

Conformément au format habituel, la Réunion comprendra huit symposiums, des communications libres, six conférences principales ainsi que les conférences des lauréats des prix Coxeter-James et de doctorat. Le prix Adrien-Pouliot sera aussi remis. De plus, une conférence publique sera donnée par Katherine Heinrich de l'Université de Regina.

Toutes les activités au programme de la Réunion se dérouleront à l'hôtel Toronto Colony, situé au coeur de Toronto, au 89, rue Chestnut.

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/winter01>

Vous trouverez les formulaires d'inscription et de réservation d'hôtel dans le numéro de septembre 2001 des *Notes de la SMC*. Ils seront aussi publiés sur notre site Web, tout comme les formulaires électroniques d'inscription et de présentation des résumés.

Conférence publique

Katherine Heinrich, Université de Regina

Conférenciers principaux

Martin Golubitsky (Université de Houston)

Masaki Kashiwara (RIMS, Université de Kyoto)

John Ockendon (Université Oxford)

David Pimm (Université de l'Alberta)

Richard Schoen (Université Stanford)

Dan Voiculescu (Université de la Californie, Berkeley).

Prix

La **conférence Coxeter-James de la SMC** sera donnée par **C. Kai Behrend**, de l'Université de la Colombie-Britannique. Le **Prix de doctorat** sera remis à **Nathan Ng**, de l'Université de Georgie.

George Bluman (Université de la Colombie-Britannique) est le lauréat 2001 du prix Adrien-Pouliot.

James Timourian (Université de l'Alberta) recevra le Prix de la SMC pour service méritoire. Le professeur Timourian recevra son prix au Lunch des participants.

Symposiums

Le Comité de coordination a organisé des symposiums sur les thèmes qui suivent. Voici la liste préliminaire des conférenciers :

Dynamique et symétrie

(Org: **Bill Langford**, Université de Guelph et **Jianhong Wu**, Université York)

Voir la section Activités connexes pour plus de détails sur les autres rencontres portant sur ce sujet

Jacques Bélair (Montréal), Sue Ann Campbell (Waterloo), Yuming Chen (Wilfrid Laurier), Florin N. Diacu (Victoria), Benoit Dionne (Ottawa), Wieslaw Krawcewicz (Alberta), Maciej Krupa (New Mexico State), Victor G. LeBlanc (Ottawa), George W. Patrick (Saskatchewan), Shigui Ruan (Dalhousie), Xiaogiang Zhao (Memorial), Xingfu Zou (Memorial).

Probabilités libres

(Org: **Alexandru Nica**, Université de Waterloo)

Voir la section Activités connexes pour plus de détails sur les autres rencontres portant sur ce sujet

Marek Bozejko (Wroclaw), Man-Duen Choi (Toronto), Ken Davidson (Fields Institute), George Elliott (Toronto), Uwe Franz (Greifswald), Fred Goodman (Iowa), Mourad Ismail (Southern Florida), Vojkan Jaksic (Ottawa), Palle Jorgensen (Iowa), Marius Junge (Illinois - Urbana), Claus Koestler (Queen's), David Kribs (Iowa), Michael Lamoureux (Calgary), Franz Lehner (Graz, Austria), James Mingo (Queen's), Gelu Popescu (Texas - San Antonio), Ian Putnam (Victoria), Zhong-Jin Ruan (Illinois - Urbana), Piotr Sniady (Texas A&M), Stanislaw Szarek (Case Western Reserve), John Toth (McGill), Quanhua Xu (Besançon, France).

Histoire des mathématiques

(Org: **Richard O'Lander** et **Ronald Sklar**, Université St. John's, N.Y.)

Conférenciers à confirmer.

Mathématiques industrielles

(Org: **Huaxiong Huang**, Université York)

Voir la section Activités connexes pour plus de détails sur les autres rencontres portant sur ce sujet

Chris Budd (Bath), Ian Frigaard (UBC), Tim Myers (Cape Town), Keith Promislow (SFU), David Ross (Kodak), Donald Schwendeman (Institut Polytechnique Renselaer), Brian Wetton (UBC).

Théorie de Lie de Kac-Moody et ses généralisations

(Org: **Nantel Bergeron, Yun Gao,**
et **Geanina Tudose**, Université York)

Bruce Allison (Alberta), Stephen Berman (Saskatchewan), Vyjayanthi Chari (California - Riverside), Chongying Dong (California - Santa Cruz), Naihuan Jing (North Carolina State), Seok-Jin Kang (Seoul National), Kailash Misra (North Carolina State), Erhard Neher (Ottawa), Arturo Pianzola (Alberta), Anne Schilling (California - Davis), Mark Shimozono (Virginia Tech), Weiqiang Wang (North Carolina State).

Moonshine

(Org: **Christopher Cummins**, Université Concordia)

Conférenciers à confirmer.

Analyse non linéaire et géométrie

(Org: **Robert McCann**, Université de Toronto)

Voir la section *Activités connexes* pour plus de détails sur les autres rencontres portant sur ce sujet

Conférenciers à confirmer.

Enseignement des mathématiques

(Org: **Pat Rogers**, Université de Windsor, **Kathy Kubota-Zarivnij**, et **Walter Whiteley**, Université York)

Présentations et discussion sur le sujet «*Mathematicians learning from Mathematics Educators*». Toute personne qui souhaiterait participer est priée de communiquer avec les organisateurs à l'adresse : whiteley@mathstat.yorku.ca

Communications libres

(Org. : **Stanley Kochman**, Université York)

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 2001**. Nous demandons à chacun de joindre au résumé le formulaire d'inscription et le règlement des frais pertinents.

Subventions pour étudiants diplômés

Les étudiants diplômés ont accès à un fonds limité pour financer une partie de leurs frais de déplacement et de séjour. Pour de plus amples renseignements, veuillez communiquer avec le Comité de coordination à l'adresse suivante : gradtravel-winter01@cms.math.ca.

Les demandeurs doivent être des étudiants de deuxième ou de troisième cycle inscrits dans une université canadienne ou étrangère. Toute demande de financement doit être accompagnée d'une lettre du superviseur de l'étudiant ou de la personne responsable des études supérieures de son département, dans laquelle il ou elle indiquera le nom de l'étudiant, son

domaine et son niveau d'études, en quoi la Réunion sera profitable à l'étudiant, si l'étudiant présentera une communication et si l'étudiant a accès à d'autres sources de financement de son université (bourses, subventions, etc.).

Cette lettre doit parvenir à la SMC avant le **31 octobre 2001** et peut être envoyée par courriel (gradtravel-winter01@cms.math.ca). Les décisions seront annoncées au début de novembre.

Si une subvention est accordée à l'étudiant, ce dernier se verra rembourser ses dépenses sur présentation du formulaire de remboursement approprié accompagné des reçus originaux.

Activités connexes

Symposium sur l'analyse non linéaire et géométrie : Ce symposium est organisé par l'Université de Toronto et aura lieu le vendredi 7 décembre. Pour de plus amples renseignements, veuillez communiquer avec Robert McCann, Université de Toronto, mccann@math.toronto.edu

Atelier sur les défis de calcul en systèmes dynamiques : Cet atelier organisé par l'Institut Fields aura lieu du lundi 3 décembre au vendredi 7 décembre. Pour de plus amples renseignements, consultez le site Web suivant : <http://www.fields.utoronto.ca/programs/scientific/01-02/numerical/dynamics/>

Atelier sur la théorie des probabilités libres et les matrices aléatoires : Cet atelier organisé par l'Institut Fields aura lieu les 6 et 7 décembre. Pour de plus amples renseignements, veuillez communiquer avec Alexandru Nica (Waterloo), anica@math.uwaterloo.ca ou Roland Speicher (Queen's), speicher@mast.queensu.ca

Journée de modélisation mathématique : Cette activité organisée par l'Institut Fields aura lieu le mardi 11 décembre. Pour de plus amples renseignements, veuillez communiquer avec Huaxiong Huang (York), hhuang@yorku.ca

Activités sociales

Une **réception** aura lieu le vendredi 7 décembre, de 19 h à 21 h, à la salle Terrace de l'hôtel Toronto Colony.

Le **lunch des participants** se tiendra le dimanche 9 décembre, de midi à 14 h, à la salle de bal Colony Grande (centre et ouest) de l'hôtel Toronto Colony. Ce repas est compris dans toutes les catégories d'inscription.

Du café et des jus seront servis pendant les pauses.

Séances de travail

La SMC organisera des séances de travail à l'occasion de cette Réunion. De plus amples renseignements seront fournis dans les prochaines annonces ou sur le site Web de la Société.

Le **Comité exécutif de la SMC** tiendra une réunion le jeudi 6 décembre de 18 h à 21 h à l'hôtel Toronto Colony (salle Carlton).

Le lunch du **Groupe de développement de la SMC** aura lieu de 11 h à 13 h le vendredi 7 décembre à l'hôtel Toronto Colony (salle Elm).

La réunion du **Conseil d'administration de la SMC** aura lieu de 13 h 30 à 18 h 30 le vendredi 7 décembre à l'hôtel Toronto Colony (salle Armoury).

Exposition

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 accessibles sur le site Web : <http://smc.math.ca/CMS/Events/winter01>.

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 2001**. 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 section des formulaires du site Web de la Réunion : <http://cms.math.ca/CMS/Events/winter01>.

Vous pouvez aussi nous faire parvenir un fichier contenant 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 2001.

Inscription

Un formulaire d'inscription paraîtra dans le numéro de **septembre 2001** des *Notes*. On peut également se le procurer auprès de la SMC :

Bureau administratif de la SMC, 577, av. 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 sur le Web au :

<http://www.cms.math.ca/CMS/Events/winter01/forms.html>

Les frais (en devises canadiennes) sont payables par chèque, 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 À OTTAWA au plus tard le 1er novembre pour que vous ayez droit aux tarifs réduits. Pour que votre inscription soit terminée avant la réunion, votre paiement doit nous parvenir au plus tard le 28 novembre.

Lunch des participants inclus	Avant le 1er nov	Après le 1er nov
Conférenciers principaux ou primés	\$ 0	\$ 0
Conférenciers	200	200
Organisateurs	135	135
Non-membres	400	520
Membres SMC/AMS/MAA avec subvention	270	350
Membres SMC/AMS/MAA sans subvention	135	175
Frais d'une journée	135	175
Postdocs, retraités	100	130
Étudiants, sans-emploi	50	65

SMC = Société mathématique du Canada
AMS = American Mathematical Society
MAA = Mathematical Association of America

Politique de remboursement

Les participants qui désirent annuler leur inscription doivent en aviser le bureau administratif de la SMC **par écrit avant le 28 novembre** 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'aux dates précisées. Après ces dates, les hôtels ne prendront vos réservations que s'il reste des chambres. Les tarifs sont par nuit, par personne, et sont indiqués en devises canadiennes.

Date limite : 5 novembre 2001

Hôtel Toronto Colony

89, rue Chestnut, Toronto (Ontario) M5G 1R1

Arrivée : 16 h; départ : 12 h

Taxes applicables : TPS (7 %), taxe provinciale (5 %)

Réserver au plus tard le 5 novembre 2001

Code de groupe : Mathematic

Téléphone : 416-977-0707 sans frais : 800-387-8687

FAX : 416-585-3157

Site Web : <http://www.toronto-colony.com>

Tarifs : 102 \$, 1 ou 2 personnes

117 \$, 3 personnes

132 \$, 4 personnes

L'hôtel offre aussi d'autres options.

(Gratuit pour les enfants de moins de 18 ans

qui partagent la chambre de leurs parents.)

(Menu d'enfants gratuit pour les enfants de moins

de 12 ans qui mangent avec leurs parents.)

Hôtel Metropolitan

108, rue Chestnut, Toronto (Ontario) M5G 1R3

Arrivée : 15 h; départ : 12 h

Taxes applicables : TPS (7 %), taxe provinciale (5 %)

Réserver au plus tard le 5 novembre 2001

Code de groupe : Cdn Math Society

Téléphone : 416-977-5000

FAX : 416-977-9513 courriel : reservations@metropolitan.com

Site Web : <http://www.metropolitan.com>

Tarifs : 145 \$, 1 ou 2 personnes

(gratuit pour les enfants de moins de 18 ans

qui partagent la chambre de leurs parents)

Hôtel Best Western Primrose

111, rue Carlton, Toronto (Ontario) M5B 2G3

Arrivée : 16 h; départ : 11 h

Taxes applicables : TPS (7 %), taxe provinciale (5 %)

Réserver au plus tard le 5 novembre 2001

Code de groupe : 3766

Téléphone : 416-977-8000 sans frais : 800-268-8082

FAX : 416-977-6323

<http://www.torontoprिमrosehotel.com>

Tarifs : 89 \$, 1 ou 2 personnes

99 \$, 3 personnes

109 \$, 4 personnes

L'hôtel offre aussi d'autres options,

(Gratuit pour les enfants de moins de 16 ans

qui partagent la chambre de leurs parents.)

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 Toronto Colony, toute réservation doit être garantie par le paiement d'une nuit ou par une carte de crédit reconnue. Les dépôts sont remboursables si la réservation est annulée au moins 48 heures avant la date d'arrivée prévue.

À l'hôtel Metropolitan, les chambres sont réservées jusqu'à 16 h le jour de l'arrivée, à moins que la réservation ne soit garantie par le paiement de la première nuit ou par une carte de crédit reconnue. Les dépôts sont remboursables si la réservation est annulée avant 16 h la date d'arrivée prévue.

À l'hôtel Best Western Primrose, les chambres sont réservées jusqu'à 16 h le jour de l'arrivée, à moins que la réservation ne soit garantie par le paiement de la première nuit ou par une carte de crédit reconnue. Les dépôts sont

remboursables si la réservation est annulée avant 16 h la date d'arrivée prévue.

Services de garde

Voici les recommandations des hôtels :

Le Toronto Colony suggère de communiquer directement avec M Patti MacKenna de *Improv Care*, au (416) 243-3285.

Le Metropolitan propose un service de garde qualifié sur préavis d'au moins 48 heures. Communiquez avec la réception de l'hôtel pour prendre les arrangements nécessaires.

Le Best Western Primrose recommande les services de l'entreprise *Christopher Robbins*, au (416) 483-4744. Après 16 h 30, communiquez avec M Redden, au (416) 439-1883.

Déplacements

Ville de Toronto : Vous trouverez des renseignements détaillés sur l'Université York et la ville de Toronto (renseignements touristiques, température et climat locaux, cartes de la ville et des attractions touristiques, etc.) sur les sites Web suivants :

<http://www.yorku.ca/>

<http://www.math.utoronto.ca/toronto/>

<http://weather.ec.gc.ca/forecast/yyz.html>

http://www.toronto.com/Toronto/Tourism_Toronto/

Stationnement : Les participants qui logent au Toronto Colony peuvent garer leur voiture au coût de 14 \$ la nuit (entrées et sorties illimitées). Ceux qui logent au Metropolitan peuvent garer leur voiture au coût de 19 \$ la nuit, ou 24 \$ avec service voiturier (entrées et sorties illimitées dans les deux cas). Ceux qui logent au Best Western Primrose peuvent garer leur voiture au coût de 15 \$ la nuit; le nombre de places est toutefois limité (entrées et sorties illimitées).

Remerciements

Nous remercions les organismes suivants de leur soutien financier :

- le Département de mathématiques de l'Université York

- le Comité du programme national (programme conjoint du Centre de recherches mathématiques, de l'Institut Fields et de l'Institut Pacific)

La Société mathématique du Canada tient à remercier les membres du Comité de coordination pour l'organisation de cette Réunion.

Comité de coordination

Programme Président et coordonnateur : Tom Salisbury (York)

Nantel Bergeron (York), Christopher Cummins (Concordia), Yun Gao (York), Huaxiong Huang (York), Kathy Kubota-Zarivnij (York), Bill Langford (Guelph), Robert McCann

(Toronto), Alexandru Nica (Waterloo), Richard O'Lander (St. John's, N.Y.), Pat Rogers (Windsor), Ronald Sklar (St. John's, N.Y.), Geanina Tudose (York), Walter Whiteley (York), Jianhong Wu (York), Graham Wright (SMC, d'office).

Logistique *Président du comité local* : Juris Steprans (York) Nantel Bergeron (York), Monique Bouchard (SMC, d'office), Stanley Kochman (York).

UNIVERSITY OF OTTAWA / UNIVERSITÉ D'OTTAWA
DEPARTMENT OF MATHEMATICS & STATISTICS
DÉPARTEMENT DE MATHÉMATIQUES ET DE STATISTIQUES

The Department of Mathematics and Statistics of the University of Ottawa invites applications for two tenure-track positions starting July 1, 2002. One position will be for a recent Ph.D. at the Assistant Professor level. For the second position, the rank and salary will be commensurate with qualifications and experience. Applications in all areas of mathematics and statistics will be considered.

Applicants should send a curriculum vitae, a research plan, and arrange for four confidential letters of recommendations, with one addressing teaching, to be sent to :

Erhard Neher, Chairman,
Department of Mathematics and Statistics,
University of Ottawa,
Ottawa, ON
Canada, K1N 6N5

Applicants are also encouraged to include up to three copies of their most significant publications. The evaluation of files will start October 15, 2001, but applications will be accepted until the positions have been filled.

Conditions of employment are set by a collective agreement. Employment equity is University policy and the University strongly encourages applications from women. Canadian citizens and permanent residents will be considered first for these positions.

Information about the department can be found at <http://www.science.uottawa.ca/mathstat>.

Le Département de mathématiques et de statistique de l'Université d'Ottawa met en concours deux postes de professeur menant à la permanence. Entrée en fonction: le 1er

juillet 2002. Un des postes, de niveau professeur assistant, s'adresse à des candidats ayant obtenu récemment leur doctorat. En ce qui concerne le second, le niveau ainsi que le salaire dépendront des qualifications et de l'expérience. Toute demande, dans quelque domaine que ce soit en mathématiques ou en statistiques, sera prise en considération.

Les candidat(e)s doivent faire parvenir leur dossier de candidature au directeur du département, Erhard Neher, Département de mathématiques et de statistique,

Erhard Neher, directeur
Département de mathématiques et de statistiques,
Université d'Ottawa,
Ottawa ON
Canada, K1N 6N5

Les dossiers commenceront à être évalués à compter du 15 octobre 2001; on continuera toutefois d'accepter des demandes jusqu'à ce que les postes soient comblés. Les dossiers doivent comprendre le curriculum vitae, le plan de recherche, quatre lettres de recommandation confidentielles dont une sur l'enseignement ainsi qu'au plus trois tirés à part des contributions récentes les plus importantes du candidat(e).

Les conditions d'emploi suivent les dispositions d'une convention collective. L'Université a une politique d'équité en matière d'emploi. Les femmes sont fortement encouragées à poser leur candidature. On étudiera d'abord les demandes des citoyens canadiens et des résidents permanents.

Pour plus de renseignement voir :

<http://www.science.uottawa.ca/mathstat>.

**CANADIAN MATHEMATICAL SOCIETY
REGISTRATION FORM - CMS WINTER MEETING 2001
December 8-10, 2001 - Toronto Colony Hotel, Toronto, Ontario**

Deadlines: Preregistration for reduced rates payment by November 1
 Arrival of payments to be processed before the meeting November 28
 Cancellation (refund less \$40 penalty) November 28

LASTNAME:	FIRSTNAME:	CMS ID #
Institution (for badge):		
Mailing Address: <input type="checkbox"/> home - <input type="checkbox"/> office		Voluntary Information: <input type="checkbox"/> Male <input type="checkbox"/> Female
Telephone:		Email:
Arrival date:		Departure date:
PLEASE MAKE YOUR HOTEL RESERVATIONS. DEADLINE : NOVEMBER 5		
Where will you be staying? <input type="checkbox"/> Toronto Colony <input type="checkbox"/> Metropolitan <input type="checkbox"/> Best Western Primrose <input type="checkbox"/> No housing required		
Special diets : <input type="checkbox"/> Kosher <input type="checkbox"/> Vegetarian <input type="checkbox"/> Diabetic <input type="checkbox"/> Low fat <input type="checkbox"/> Milk allergy <input type="checkbox"/> Nut allergy <input type="checkbox"/> Other:		
I am : <input type="checkbox"/> a Plenary Speaker <input type="checkbox"/> a Prize Recipient <input type="checkbox"/> a Session Speaker <input type="checkbox"/> an Organizer <input type="checkbox"/> a delegate		
<input type="checkbox"/> I would like to deliver a contributed paper. DEADLINE (ABSTRACT & REGISTRATION) : OCT 15		
My abstract: <input type="checkbox"/> is enclosed <input type="checkbox"/> will follow <input type="checkbox"/> 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: <input type="checkbox"/> CMS <input type="checkbox"/> CAIMS <input type="checkbox"/> CORS <input type="checkbox"/> CSHPM <input type="checkbox"/> SSC <input type="checkbox"/> AMS <input type="checkbox"/> MAA <input type="checkbox"/> SIAM <input type="checkbox"/> AWM		
(check all <input type="checkbox"/> University professor <input type="checkbox"/> Elementary teacher <input type="checkbox"/> High school teacher <input type="checkbox"/> College teacher that apply) <input type="checkbox"/> CEGEP teacher <input type="checkbox"/> Student <input type="checkbox"/> Postdoctoral fellow <input type="checkbox"/> Retired <input type="checkbox"/> Unemployed		
PLEASE INDICATE WHICH SPECIAL OR RELATED EVENT(S) YOU MIGHT BE ATTENDING		
<input type="checkbox"/> Public Lecture		
PLEASE INDICATE WHICH SESSION(S) YOU MIGHT BE ATTENDING		
<input type="checkbox"/> Dynamics/Symmetry <input type="checkbox"/> Free Probability <input type="checkbox"/> History of Mathematics <input type="checkbox"/> Industrial Mathematics		
<input type="checkbox"/> Kac-Moody Lie Theory <input type="checkbox"/> Mathematics Education <input type="checkbox"/> Moonshine <input type="checkbox"/> Non-lin/Geom Analysis		
<input type="checkbox"/> Contributed Papers		

All categories also include a ticket to the Delegates' Luncheon.

Please circle one of the registration categories in the chart below	Before Nov 1	After Nov 1
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 members with grants	270	350
CMS/AMS/MAA members without grants	135	175
One-day fee	135	175
Postdocs, retired	100	130
Students, unemployed	50	65

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.)

Don't forget to allow ample time for your registration to reach us before the deadline date.

**SOCIÉTÉ MATHÉMATIQUE DU CANADA
FORMULAIRE D'INSCRIPTION - HIVER 2001
8-10 décembre 2001 - Hôtel Toronto Colony, Toronto (Ontario)**

Dates importantes: Préinscription à prix réduit paiement avant le 1er novembre
 Arrivée de paiement pour compléter l'inscription avant la Réunion 28 novembre
 Annulation - Préinscription (remboursement moins 40 \$) 28 novembre

NOM:	PRÉNOM:	No. SMC
Établissement (pour le "badge"):		
Adresse postale: <input type="checkbox"/> domicile - <input type="checkbox"/> travail		Information optionnelle: <input type="checkbox"/> Homme <input type="checkbox"/> Femme
Téléphone:	Courier él:	
Date d'arrivée:	Date de départ:	
VOUS ÊTES PRIÉS DE FAIRE VOS PROPRES RÉSERVATIONS D'HÔTEL. DATE LIMITE : 5 NOVEMBRE		
Veuillez indiquer votre choix d'hôtel <input type="checkbox"/> Toronto Colony <input type="checkbox"/> Metropolitan <input type="checkbox"/> Best Western Primrose <input type="checkbox"/> non requise		
<input type="checkbox"/> Kasher <input type="checkbox"/> Végétarien <input type="checkbox"/> Diabétique <input type="checkbox"/> Pauvre en mat grasses <input type="checkbox"/> Allergie-lait <input type="checkbox"/> Allergie-noix <input type="checkbox"/> Autre:		
Je suis un: <input type="checkbox"/> organisateur <input type="checkbox"/> conférencier primé <input type="checkbox"/> conf. principal <input type="checkbox"/> conf. de séance <input type="checkbox"/> participant		
<input type="checkbox"/> J'aimerais présenter une communication. DATE LIMITE (RÉSUMÉ ET INSCRIPTION) : 15 OCT		
Mon résumé <input type="checkbox"/> est inclus <input type="checkbox"/> suivra <input type="checkbox"/> suivra par site web ou courriel		
Nous demandons à toute personne désirant présenter une communication de joindre au résumé son formulaire et le règlement de ses frais d'inscription.		DATE LIMITE : 15 OCT
Adhésions: <input type="checkbox"/> SMC <input type="checkbox"/> SCMI <input type="checkbox"/> SCRO <input type="checkbox"/> SCHPM <input type="checkbox"/> SSC <input type="checkbox"/> AMS <input type="checkbox"/> MAA <input type="checkbox"/> SIAM <input type="checkbox"/> AWM		
Cochez <input type="checkbox"/> Professeur d'université <input type="checkbox"/> Enseignant - élém. <input type="checkbox"/> Enseignant - secondaire <input type="checkbox"/> Enseignant - Collège s.v.p. <input type="checkbox"/> Enseignant - CÉGEP <input type="checkbox"/> Étudiant(e) <input type="checkbox"/> Postdoc <input type="checkbox"/> À la retraite <input type="checkbox"/> Sans-emploi		
VEUILLEZ INDIQUER À QUEL(S) ÉVÈNEMENT(S) VOUS PARTICIPEZ		
<input type="checkbox"/> Conférence publique		
VEUILLEZ INDIQUER À QUELLE(S) SÉANCE(S) VOUS PARTICIPEZ		
<input type="checkbox"/> Dynamique et symétries <input type="checkbox"/> Probabilités libres <input type="checkbox"/> Histoire des maths <input type="checkbox"/> Maths industrielles		
<input type="checkbox"/> Théorie de Lie de Kac-Moody <input type="checkbox"/> Enseignement des maths <input type="checkbox"/> Moonshine <input type="checkbox"/> Analyse nonlin/géom.		
<input type="checkbox"/> Communications libres		

Un billet pour le lunch des délégués est inclus dans toutes les catégories d'inscription.		
Veuillez encrer la catégorie d'inscription choisie	Avant le 1 nov	Après le 1 nov
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 avec subvention	270	350
Membres SMC/AMS/MAA sans subvention	135	175
Frais d'une journée	135	175
Postdocs, retraités	100	130
Étudiants, sans-emploi	50	65

TOTAL \$

Mode de paiement: <input type="checkbox"/> Chèque (au nom de la SMC) <input type="checkbox"/> VISA <input type="checkbox"/> Master Card <input type="checkbox"/> 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 la carte d'une autre personne, veuillez inscrire le nom du détenteur et le faire signer.)	
Lettres moulées:	Signature:

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

N'oubliez pas d'envoyer votre inscription assez longtemps à l'avance pour qu'elle nous parvienne avant la date limite!

2001 ENDOWMENT GRANTS COMPETITION
CONCOURS DE BOURSES DU FONDS DE DOTATION 2001
CALL FOR PROPOSALS / APPEL DE PROPOSITIONS

The Canadian Mathematical Society is pleased to announce a new grants competition to fund projects that contribute to the broader good of the mathematical community. A portion of the annual income from the CMS Endowment Fund will be used to fund such projects and an Endowment Grants Committee (EGC) will administer the distribution of the grants and will adjudicate proposals for projects.

Proposals must address the goal and statement of purpose of the Canadian Mathematical Society:

The goal of the Canadian Mathematical Society is to support the promotion and advancement of the discovery, learning, and application of mathematics. The CMS Statement of Purpose is:

1. To unify and support Canadian mathematicians through effective communication, broad membership, sponsorship of diverse activities, and partnerships with like professional societies.
2. To support mathematics research through the communication of current research to both the specialist and non-specialist, public recognition of research accomplishments and collaboration with the research institutes and granting agencies.
3. To support the advancement of mathematics education through joint projects with mathematics educators at all levels, promotion of educational advancements, and partnerships with provincial ministries of education and organizations supporting mathematics education.
4. To champion mathematics through initiatives that explain, promote and increase the general understanding of mathematics, provide extra-curricula opportunities for students, and encourage partnerships with corporate, government and not-for-profit agencies.

An applicant may be involved in only one proposal per competition as a principal applicant. Proposals must come from CMS members, or, if joint, at least one principal applicant must be a CMS member.

The EGC will consider funding proposals for a maximum of three years. However, multi-year proposals must be funded

from the funds available to the EGC in the year of application. The EGC will consider funding proposals to a maximum of \$5,000 per year.

The EGC committee intends to favour proposals where CMS funds can be leveraged or where proposals have no other natural funding body to which to apply.

If it is anticipated that a proposal will generate something of lasting financial value, proposers must indicate that this is the case and declare their intent with respect to that value.

An application form, advice and directions are available at the CMS website www.cms.math.ca/Grants/. Proposers will have ample opportunity to sell their ideas to the EGC.

We hope to be able to have an applicant fill out the application on an HTML form and submit it electronically. If that does not work, we will accept a hard copy as an e-mail attachment using either the Microsoft Word template or the \LaTeX template available for downloading from the CMS web site given above. Send the proposal as an attachment to the e-mail address chair-egc@cms.math.ca. We would also accept a proposal in these templates sent as hard copy to the CMS Executive Office. If you have any immediate questions on the program or the application process please e-mail the Chair of the EGC, J. G. Timourian, at chair-egc@cms.math.ca. If you plan on applying, the committee would find it extremely useful if you sent the Chair an e-mail expressing your interest as soon as possible.

Proposals must be received at the CMS Executive Office or electronically by the EGC committee no later than **September 30, 2001**.

Proposals should be sent to the following address:

2001 CMS Endowment Grants Competition
Canadian Mathematical Society
577 King Edward, Suite 109
P.O. Box 450, Station A
Ottawa, Ontario
K1N 6N5

Again, the relevant electronic addresses are www.cms.math.ca/Grants/ for directions, forms, advice and electronic form submission; chair-egc@cms.math.ca for e-mail contact with the Chair of the EGC and for submission of a proposal as an attached file to an e-mail.

La Société mathématique du Canada (SMC) est heureuse d'annoncer la tenue d'un nouveau concours de bourses pour le financement d'activités qui contribuent à l'essor global de la communauté mathématique. Une partie des recettes annuelles tirées du Fonds de dotation de la SMC servira à financer de telles activités. Le Comité d'attribution des bourses du fonds de dotation (CABFD) se chargera d'évaluer les propositions et d'attribuer les bourses.

Les propositions doivent être conformes à l'objectif et à l'énoncé d'intention de la SMC :

La Société mathématique du Canada s'est donnée pour objectif de promouvoir et de favoriser la découverte et l'apprentissage des mathématiques, et les applications qui en découlent. Son énoncé d'intention est le suivant :

1. Regrouper et appuyer les mathématiciens canadiens en favorisant la communication et l'adhésion à grande échelle, en commanditant diverses activités et en établissant des partenariats avec des associations professionnelles semblables à la nôtre.
2. Encourager la recherche mathématique en diffusant les résultats de recherches en cours aux spécialistes et aux non-spécialistes, en faisant reconnaître publiquement les travaux de chercheurs et en collaborant avec les instituts de recherche et les organismes subventionnaires.
3. Favoriser l'apprentissage des mathématiques en réalisant des projets avec des professeurs de mathématiques de tous les niveaux, en faisant connaître les progrès dans l'enseignement et en établissant des partenariats avec les ministères de l'éducation provinciaux et les organismes voués à l'apprentissage des mathématiques.
4. Défendre les mathématiques en créant des initiatives visant à expliquer, à promouvoir et à mieux faire connaître la discipline, en organisant des activités parascolaires et en encourageant les partenariats avec les sociétés privées, les gouvernements et les organismes à but non lucratif.

Un demandeur ne peut présenter qu'une proposition par concours en tant que demandeur principal. Les propositions doivent venir de membres de la SMC. S'il s'agit d'un projet conjoint, au moins un des demandeurs principaux doit être membre de la SMC.

Le CABFD évaluera les projets qui s'étalent sur un maximum de trois ans. Les projets s'échelonnant sur plusieurs

années seront toutefois financés en fonction des fonds dont disposera le Comité l'année de la demande. Le Comité se limitera aux propositions dont le financement demandé n'excède pas 5 000 \$ par année.

Le CABFD désire privilégier les propositions où les fonds de la SMC peuvent être équilibrés ou les propositions qui ne disposent d'aucun organisme de financement naturel où postuler.

Si les demandeurs prévoient tirer une valeur financière durable du projet, ils doivent l'indiquer et expliquer ce qu'ils ont l'intention d'en faire.

Le formulaire de demande, les instructions pertinentes et des conseils est disponible au site de la SMC www.smc.math.ca/Grants/. Ainsi, les postulants auront tout le temps voulu pour vendre leurs idées au CABFD.

Nous espérons qu'il sera possible de remplir la demande en format HTML et de la soumettre électroniquement mais sinon, nous accepterons les fichiers annexés à un message de courriel réalisés à l'aide des documents types de format Microsoft Word ou \LaTeX téléchargeables à partir du site Web de la SMC, à l'adresse suivante : pres-egc@smc.math.ca. Nous accepterons aussi les copies imprimées de ces documents types au bureau administratif de la SMC. Pour toute question sur le programme ou sur le processus de demande, prière d'envoyer un message par courriel au président du CABFD, J. G. Timourian, à l'adresse suivante : pres-egc@smc.math.ca. Si vous prévoyez faire une demande, le Comité vous saurait gré de lui faire part de votre intérêt le plus tôt possible en faisant parvenir un message par courriel à son président.

Les propositions doivent parvenir au bureau administratif de la SMC au plus tard **le 30 septembre 2001**.

Envoyer les propositions à l'adresse suivante :

Concours de bourses du fonds de dotation 2001
Société mathématique du Canada
577, avenue King-Edward, bureau 109
C. P. 450, succursale A
Ottawa (Ontario)
K1N 6N5

Rappel - liste des adresses pertinentes : www.smc.math.ca/Grants/ : instructions, formulaires, conseils, envoi du formulaire électronique; pres-egc@smc.math.ca : pour communiquer avec le président du CABFD et envoyer vos demandes en annexe à un message de courriel.

CALL FOR NOMINATIONS / APPEL DE CANDIDATURES

Nominating Committee / Comité des mises en candidatures

The term of office of the Chair and three members of the Nominating Committee ends on December 31, 2001. The positions to be filled are as follows:

One vacancy: Chair

One vacancy: Representative for the Quebec region

One vacancy: Representative for the Ontario region

One vacancy: Representative for the West region

The term of office of the Chair is two years plus an additional two years as a member of the committee for the appropriate region. The term for the other members is four years. The continuing members will be:

B. Monson (UNB) - Atlantic

J. Borwein (Simon Fraser) - President (Ex-Officio)

C. Rousseau (Montréal) - President-Elect (Ex-Officio)

The deadline for the submission of candidates is **October 15, 2001**. Names, together with the candidate's agreement to serve, should be sent to the address below.

Les mandats du président et pour trois membres du comité des mises en candidatures prennent fin le 31 décembre 2001. Les positions à combler sont les suivantes :

Une position: Président

Une position: Représentant pour la région du Qu

Une position: Représentant pour la région de l'Ontario

Une position: Représentant pour la région de l'ouest

Le mandat du président est de deux ans plus deux années supplémentaires comme membre du comité pour la région appropriée. Pour les autres membres le mandat est de quatre ans. Les membres qui continuent sont :

B. Monson (UNB) - Atlantique

J. Borwein (Simon Fraser) - Présidente (Ex-Officio)

C. Rousseau (Western) - Président-élu (Ex-Officio)

L'échéance pour nommer des candidats est **le 15 octobre 2001**. Les noms, avec consentement du candidat, devraient être acheminés à l'adresse ci-dessous:

Dr. Graham P. Wright / Secretary / Secrétaire
Canadian Mathematical Society / Société mathématique du Canada
 577 King Edward, Suite 109
 C.P. / P.O. 450, Succursale / Station A
 Ottawa (Ontario) Canada
 K1N 6N5

Editor-in-Chief - CRUX with MAYHEM / Rédacteur-en-chef - CRUX avec MAYHEM

The term of office of the present Editor-in-Chief of the Crux Mathematicorum with Mathematical Mayhem will end December 31, 2002.

The Publications Committee of the CMS now invites nominations for the next Editor-in-Chief to serve a five year term.

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

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

The Publications Committee will communicate its recommendation to the Executive Committee of the CMS in April

2002. Any input from the mathematical community concerning this important selection process is welcome.

Applications (with supporting material) and/or comments should be sent to the address below:

The deadline for the receipt of applications is **November 15, 2001**.

Le mandat des rédacteur-en-chef actuels du Crux Mathematicorum with Mathematical Mayhem prendra fin le 31 décembre 2002.

Le Comité des publications de la SMC sollicite des mises en candidatures pour les prochains rédacteur-en-chef pour un mandat de cinq ans.

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

- Un curriculum vitae
- L'expression de votre opinion sur la publication indiquant si des changements de directions ou de politiques sont envisagés

- Puisque les responsabilités de rédaction nécessitent souvent une réduction dans la charge normale de travail, les candidats devraient indiquer qu'ils(elles) ont l'appui de leur département et en particulier, de leur chef de département.

Le Comité des publications transmettra ses recommandations au Comité exécutif de la SMC en avril 2002. Les

commentaires de la communauté mathématique au sujet de cette importante sélection sont bienvenus.

Les mises en candidatures (avec matériel à l'appui) et/ou commentaires devraient être acheminés à l'adresse qui suit:

L'échéance pour la réception des mises en candidature est le **15 novembre 2001**.

Address for Nominations / Adresse de mise en candidatures:

James A. Mingo, Chair / Président
 CMS Publications Committee / Comité des publications de la SMC
 Department of Mathematics and Statistics
 Queen's University
 Kingston, Ontario K7L 3N6
 chair-pub@cms.math.ca

Editors-in-Chief - CMS Notes / Rédacteurs-en-chef - Notes de la SMC

The term of office of the present Editors-in-Chief of the *CMS Notes*, P.A. Fillmore and S. Swaminathan will end December 31, 2002.

The Publication Committee of the CMS invites applications for the next Editor(s)-in-Chief to serve for a five year term.

Applications should consist of a formal letter of application and a curriculum vitae.

The Publication Committee will communicate its recommendation to the Executive Committee of the CMS in April 2002.

Applications and/or comments should be sent, by **November 15, 2001** to the address below:

Le mandat du rédacteurs-en-chef actuels des *Notes de la SMC*, P. A. Fillmore et S. Swaminathan, prendra fin le 31 décembre 2002.

Le Comité des publications de la SMC sollicite les mises en candidature pour le prochain rédacteurs-en-chef pour un mandat de cinq ans.

Les mises en candidature doivent inclure une lettre formelle et un curriculum vitae.

Le Comité des publications transmettra ses recommandation au Comité exécutif de la SMC en avril 2002.

Les candidatures et/ou commentaires devraient être acheminés, avant le **15 Novembre 2001** à:

Address for Nominations / Adresse de mise en candidatures:

James A. Mingo, Chair / Président
 CMS Publications Committee / Comité des publications de la SMC
 Department of Mathematics and Statistics
 Queen's University
 Kingston, Ontario K7L 3N6
 chair-pub@cms.math.ca

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 2002 (University of Ottawa / Université d'Ottawa, Ottawa, 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 deadline 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 2002 (University of Ottawa / Université d'Ottawa, Ottawa, 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). Bien qu'en général il n'y ait pas de conférences plénières de prévues pour ces sessions, 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, qui paraîtra dans le programme de la réunion.

Toute personne désireuse d'organiser une session doit faire parvenir un projet au directeur de réunion avant la date ci-dessous.

Deadline: October 15, 2001 / Date limite : le 15 octobre 2001

Symplectic Geometry / Géométrie symplectique

Organizers: Lisa Jeffrey and / et Eckhard Meinrenken (Toronto)

Partial Differential Equations / Équations aux dérivées partielles

Organizers: Victor Ivrii (Toronto) and / et John Toth (McGill)

Number Theory / Théorie des nombres

Organizers: Damien Roy (Ottawa) and Kenneth Williams (Carleton)

Finite Elements / Éléments finis

Organizer: André Fortin (Laval)

Financial Mathematics / Mathématiques financières

Organizer: Luis Seco (Toronto)

Daniel Daigle, Meeting Director / Directeur de la réunion

Department of Mathematics and Statistics

University of Ottawa, Faculty of Science

Ottawa, Ontario Canada K1N 6N5

Tel: (613) 562-5800 ext. 3522 Fax: (613) 562-5776

e-mail: daniel@zenon.mathstat.uottawa.ca

CMS 2000 TREASURER'S REPORT

Editorial Note: For other 2000 committee reports, please see the May 2001 issue of the CMS Notes.

Arthur Sherk (Toronto)

Fiscally speaking, the year 2000 was successful without being spectacularly so. The Operations Fund showed total revenue of \$1,317,939 against expenditures of \$1,288,953, for a positive balance of \$28,986. There was a decrease relative to 1999 in donations and miscellaneous income, but all other revenue sources were up over the previous year. Publishing continues to show a large excess of revenue over expenses, and thus subsidizes the other three divisions: General, Research, and Education.

In principle, the three subsidized divisions should each not exceed a deficit of \$110,000. The General and Research Divisions managed to keep within that guideline. This was particularly gratifying in the case of the Research Division, as it reflected the success of Math 2000, the joint meeting with our Canadian mathematical societies that attracted a large number

of delegates.

The Education Division exceeded the guidelines for a variety of reasons, some of which could not have been anticipated. More activities than ever were administered by the Education Division, and they were all successful. These activities also had the advantage of raising the profile of the CMS in the general public; the only loss was a monetary one. Some special funds have already been secured for education-related activities in 2001 and the program is anticipated to be larger than ever before. Hopefully, there will be revenues to cover the activities. If not, and if an excessive deficit materializes in 2001, the 2002 activities will probably have to be scaled down.

The investment income funds all grew satisfactorily last year, in spite of a volatile money market. The combined Restricted Investment Funds are now almost at the two million mark.

NEW AND NOTEWORTHY MATHEMATICS TITLES FROM CAMBRIDGE

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0-521-56069-1 Hardback \$116.00
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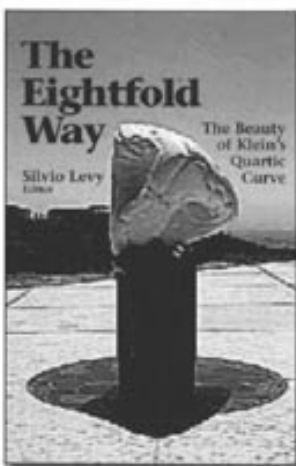
Recent Trends in Combinatorics

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NEWS FROM DEPARTMENTS

Bishop's University, Lennoxville, QC

Appointments: François Huard (Chair of the Department of Mathematics, July 2001); N. Brad Willms (Dean, Division of Natural Sciences and Mathematics, July 2001). Richard Brewster (Associate Professor, computer science, July 2001). Majid Allili (Assistant Professor, mathematics and computer science, July 2001). Schosha Merovitz (Head-Tutor/Coordinator, Mathematics and Statistics Help Center, September 2001).

Promotions: N. Brad Willms (Assistant Professor, tenure, July 2001).

Resignation: Andrew Dean, to accept appointment as Dean of the Faculty of Arts and Science, Nippissing University, North Bay, ON.

Brock University, St. Catharines ON

Appointments: Yuanlin Li (Assistant Professor, algebra, July 2001), Thomas Wolf (Associate Professor, mathematical computation, relativity, July 2001).

Promotions: Mei Ling Huang (Professor, July 2001), Stephen Anco (Associate Professor, July 2001).

Retirement: Howard Bell (July 2001), appointed Professor Emeritus.

Award: Mei Ling Huang, the 2001 YMCA Women of Distinction Award for Science and Technology.

Laval University, Québec QC

Appointment : Javad Mashreghi, (Assistant Professor, complex analysis, September 2001).

Retirements: Jacques Fortin, (April 2001) Norbert Lacroix (August 2001).

University of Lethbridge, Lethbridge AB

Appointments: Amir Akbary, (Assistant Professor - tenure track, number theory, July 2001). Joy Morris, (Assistant Professor - tenure track, graph theory, July 2001).

Award: Joy Morris (NSERC Woman in Science Award).

Visitor: Behruz Tayfeh Rezaie (Iran, combinatorics, June - August, 2001).

McGill University, Montreal QC

Promotion: John Toth (Associate Professor, promotion with tenure, June 2001).

Appointments: Peter Bartello (joint with Atmospheric and Oceanic Sciences, Associate Professor, applied mathematics, June 2001). Dave Bryant (joint with the School of Computer Science, Assistant Professor, combinatorics and bioinformatics, July 1, 2001). Vojkan Jaksic (Associate Professor, with tenure, analysis and mathematical physics, July 2001). Nilima Nigam (Assistant Professor, applied mathematics, July

2001). Daniel Wise (Assistant Professor, topology and group theory, July 2001).

Retirement: K.K. Tam, September 2001.

Award: D. Jakobson, Alfred P. Sloan Research Fellowship.

Memorial University of Newfoundland, St. John's NF

Appointments: Fathi Mahfouz, (PDF, January-December, 2001); Yuxia Guo, (PDF, September 2001 - August 2002).

Promotion. Yiqiang Zhou (Associate Professor, September 2001)

Retirement: P. P. Narayanaswami (September 2001)

Resignation: Richard Charron

Award/Distinction: Serpil Kocabiyik, Petro Canada Young Innovators Award; Danny Summers, University Research Professor;

Visitors: W. O. Criminale, (USA, fluid dynamics, August-September, 2001); Jianhua Huang, (P.R. China, applied mathematics, May-December 2001); G. E. Moorhouse, (USA, discrete mathematics, September 2001-August 2002).

Simon Fraser University, Burnaby BC

Promotions: Tim Swartz (Professor, September 2001), Carl Schwarz (Professor, September 2001).

Visitors: Ho-Yon Won (South Korea, Statistics, July 2001 - August 2002), Ali Reza Rotouhi (Iran, Statistics, July 2001 - July 2002), Lixin Song (P.R. of China, Statistics, July 2001 - June 2002), Xueli Wei (China, Statistics, September 2001 - April 2002), Nihal Yatawara (Australia, Statistics, January 2002 - April 2002).

University of British Columbia, Vancouver BC

Appointments: David Brydges (Professor-CRC chair, July 1, 2001, statistical mechanics); Michael Bennett (Associate Professor with tenure, July 1, 2001, number theory); Zinoviy Reichstein (Associate Professor with tenure, July 1, 2001, algebraic geometry/algebra); Jim Bryan (Assistant Professor, July 1, 2001, algebraic geometry); Stephen Gustafson (Assistant Professor, July 1, 2001, partial differential equations); Greg Martin (Assistant Professor, July 1, 2001, number theory); Laura Scull (Assistant Professor, July 1, 2001, topology); Ke-qin Liu (Instructor, July 1, 2001, Lie algebras); Serguei Novocelskii (Instructor, July 1, 2001, differential equations).

Promotions: Joel Friedman (Professor, July 2001); Richard Froese (Professor, July 2001); Jingyi Chen (Associate Professor with tenure, July 2001).

Retirements: John Coury (June 2001); Peter Kiernan (June 2001); George Maxwell (June 2001); Robert Miura (June 2001).

Death: Douglas Perry

Awards/Distinctions: Kai Behrend (CMS 2001 Coxeter-James Prize); Priscilla Greenwood, (CMS 2002 Krieger-Nelson Prize); David Boyd (CMS 2001 Jeffery-Williams Prize); Edwin Perkins (CMS 2002 Jeffery-Williams Prize); Brian Wetton (PIMS 2000 Industrial Outreach Prize); George Bluman (PIMS 2000 Education Prize).

Visitors: Temur Chaolu, (Inner Mongolia (China), differential equations/symbolic computation, September 2001-August 2002); Zahra Gooya, (Iran, math education, June 2001-February 2002); Sadok Kallel, (France, topology,

September 2001-December 2001); KA Landman, (Australia, math biology, September 2001-December 2001); Cherif Nouar, (France, industrial math, September 2001-August 2002); Remco van der Hofstad, (Netherlands, statistical mechanics, October 2001-December 2001); Yongjin Wang, China,(probability, September 2001-August 2002); Bijan Zanganeh, (Iran, probability, May 2001-February 2002).

University of Manitoba, Winnipeg MN

Appointment: Shiu-Hong Lui (Assistant Professor, numerical analysis and applied analysis, January 2002).

CALENDAR OF EVENTS / CALENDRIER DES ÉVÉNEMENTS

SEPTEMBER 2001

14–18 Function Spaces, Proximities and Quasi-Uniformities (Caserta, Italy)

<http://www.unina2it/topological.sun/homesun.html>

22–26 Applications of Discrete Mathematics, Australian Mathematical Society (Australian National University, Canberra) *Ian Roberts: iroberts@darwin.ntu.edu.au* or *Lynn Batten: lmbatten@deakin.edu.au*

OCTOBER 2001

13–14 Ontario Topology Seminar, Fall 2001 (University of Western Ontario, London ON)

<http://www.math.uwo.ca/ots.html>

25–28 Annapolis Algebraic Geometry Conference in memory of Ruth Michler (US Naval Academy, Annapolis, Maryland) <http://mathweb.msathsci.usna.edu/Faculty/Conferences/-AlbGeom2001/aagc.html>

DECEMBER 2001

3–8 NIPS 2001, Neural Information Processing Systems: Natural and Synthetic (Vancouver, BC)

nipsinfo@salk.edu, <http://www.cs.cmu.edu/Web/Groups/NIPS/>

8–10 CMS Winter Meeting / Réunion d'hiver de la SMC (Toronto Colony Hotel, Toronto, Ontario)

<http://www.cms.math.ca/CMS/Events/winter01>

10–14 ICMI Study Conference on the Future of Teaching and Learning of Algebra (University of Melbourne, Australia)

<http://www.edfac.unimelb.edu.au/DSME/icmi-algebra/>

JANUARY 2002

6–9 Joint Mathematics Meetings, San Diego, CA

<http://www.ams.math.org/meetings/>

SEPTEMBRE 2001

FEBRUARY 2002

2–3 9th Southern California Geometric Analysis Seminar (UC at Irvine, CA)

<http://www.math.uci.edu/scgas>

MARCH 2002

26–April 4 Instructional Conference on Combinatorial Aspects of Mathematical Analysis (ICMS, Edinburgh, UK)

<http://www.ma.hw.ac.uk/icma/current/>

MAY 2002

3–5 AMS Eastern Section Meeting (CRM, Université de Montréal)

<http://www.ams.math.org/meetings/>

JUNE 2002

6–8 CAIMS 2002 (University of Calgary)

Samuel Shen: shen@maildrop.srv.ualberta.ca

15–17 CMS Summer Meeting / Réunion d'été de la SMC (Université Laval, Québec, Québec)

Monique Bouchard: meetings@cms.math.ca

17–21 Seventh International Conference on p-adic Functional Analysis, (University of Nijmegen, The Netherlands)

<http://www.sci.kun.nl/math/p-adic2002/>

24–28 Special Activity in Analytic Number Theory (Max Planck Institute, Bonn) *moroz@mpim-bonn.mpg.de*

JULY 2002

22–30 44rd International Mathematical Olympiad (University of Strathclyde, Glasgow, UK)

FÉVRIER 2002

MARS 2002

MAI 2002

JUIN 2002

JUILLET 2002

AUGUST 2002

3–10 Logic Colloquium 2002, ASL European Summer Meeting (WestfWilhelms-Universität, München, Germany)

http://www.math.uni-muester.de/LC2002

20–28 International Congress of Mathematicians (Beijing, China) *http://icm2002.org.cn/*

DECEMBER 2002

8–10 CMS Winter Meeting / Réunion d'hiver de la SMC (University of Ottawa / Université d'Ottawa, Ottawa, Ontario)

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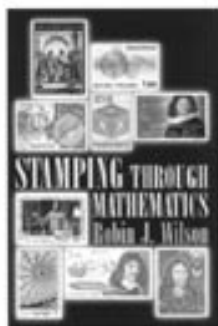
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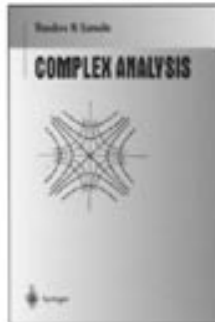


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