



# CMS NOTES de la SMC

## FROM THE PRESIDENT'S DESK

**Tom Salisbury**  
*York University, Toronto*



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occasion for thanking the University of Manitoba, not just for hosting the meeting, but for its ongoing support of the CMS through the presence there of the **CMS Publications office**. The Office, and its principals Michael Doob and Craig Platt, has kept the CMS right at the cutting edge of TeX-based scientific publishing. At the meeting banquet, University of Manitoba Dean of Science Mark Whitmore and I were able to announce the creation of a new **CMS-Manitoba Graduate Fellowship**, that recognizes the contributions of the University to the mission of the CMS.

The Board also thanked Nassif Ghoussoub and BIRS for their efforts to accommodate the

**Mexican IMO team** in Banff. The team was there in July to share in the Canadian team's training session, organized by Bill Sands (Calgary). The CMS and the Sociedad Matemática Mexicana have already collaborated on scientific meetings, but joint IMO training is a new feature of this fruitful relationship. Making this logically possible on short notice took substantial work by Nassif and his staff, and I'd like to reiterate the CMS's gratitude. By the time you read this, results should be available for both teams, from the International Mathematical Olympiad in Vietnam.

Representatives of the Natural Sciences and Engineering Research Council (NSERC) attended the Winnipeg meeting, and discussed the results of the latest grants competition, as well as the pressures and changes

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facing NSERC regarding the grant selection committee structure. To address these issues, a **mathematics liaison committee** has been struck, chaired by Jacques Hurtubise (McGill). The CMS's representative is our President-Elect, Tony Lau (Alberta), and I would urge you to talk to Tony or other committee members if you have thoughts about the direction of mathematics funding at NSERC. The committee includes Margaret Beattie (Mount Allison), Ed Bierstone (Toronto), Hans Boden (McMaster), Walter Craig (McMaster), Andrew Granville (Montreal), Rachel Kuske (UBC), Bill Langford (Guelph), Gordon Slade (UBC), and Keith Taylor (Dalhousie).

The Board also heard that **Sun Life Financial**, a long-time sponsor of the CMS, has significantly increased its support of our competitions-related activities, in recognition of which the competition now known colloquially as "the Open" will be renamed the **Sun Life Financial Canadian Open Mathematics Challenge**. We are grateful to Sun Life for helping maintain this important program. I would also like to acknowledge the University of Lethbridge, which has recently established a fund to support student travel to CMS meetings, in memory of its late faculty member **Jiping (Jim) Liu**.

The Winnipeg meeting marked the end of service for many committee members. I would like to thank all departing Board members, and especially our former President *continued page 15*



## Leonard Euler (1707-1783)

...nullam quod tetigit non ornavit.  
on Oliver Goldsmith (1728-74) by Samuel Johnson.

This year is the tercentenary of the birth of Euler; a variety of celebrations and activities at Basel, his birthplace, are listed in [1].

Samuel Johnson's encomium above (nothing did he touch that he did not adorn) can very well be applied to Euler. Euler was one of the greatest and the most prolific mathematicians that ever lived. An Euler's Theorem can be found in almost every branch of mathematics, and that too very significantly enriching the relevant topic. Naturally much has been written about Euler's life and work. The Mathematical Association of America has published three volumes [2, 3, 4] on the occasion of the tercentenary. A translation of Emil A. Fellman's biography [5] has been published recently by Birkhäuser; See [6] for a good review of this book.

It was Euler who made the first breakthrough toward proving Fermat's Last Theorem. By examining very carefully Fermat's jottings concerning the case for  $n = 4$ , he adapted Fermat's method of infinite descent and succeeded in proving the case for  $n = 3$ . His other contributions to number theory include the discovery of (i) what is now known as Euler's totient function, (ii) the quadratic reciprocity law (but not its proof), and (iii) the use of continued fractions in solving Pell's equation.

Königsberg bridge problem and Euler's solution to it are mentioned in books on recreational mathematics and also in problem-solving books. It is often said that Euler investigated this problem by drawing a graph of the city with vertices representing land areas and edges representing the bridges. Euler didn't draw graphs; indeed, graphs appeared only in the second half of the nineteenth century. What exactly Euler did and how analysis situs (topology) and networks theory arose in this connection are investigated in an article by Brian J. Hopkins and Robin Wilson [3].

There is an oft-quoted anecdote in which Catherine the Great encouraged Euler to deflate the atheist Diderot in a debate. The story has it that Euler presented to Diderot not an argument, but an equation that he claimed to prove the existence of God, a bluff which the non-mathematical Diderot was unable to call. However, Diderot wasn't totally ignorant of mathematics. Indeed, he had written five creditable memoirs on some mathematical problems. It is now well established by historians that this Euler-Diderot episode has no historical bearing. See [7].

Euler possessed a phenomenal memory that served him well during the period of blindness towards the end of his life. It is said that he had learnt Virgil's Aeneid by heart so thoroughly that he could recite the entire work word for word even remarking where each page of his copy ended and the next one began. Two years before his death he presented to the Pittsburgh Academy a pair of papers suggested by the following line in the Aeneid, describing ships anchoring near the shore:

*ancora de prora jacitur, stant littore puppes*  
(the anchor drops, the rushing keel is staid).

R. P. Agnew begins the Preface to his Calculus text with the following sentence: "There is an element of truth in the old saying

that Euler's textbook, *Introductio in Analysis Infinitorum* (Lausanne 1748), was the first great Calculus textbook, and that all elementary calculus texts published since that time have been copied from Euler or have been copied from books that were copied from Euler."

Euler introduced some important features of modern mathematical notation, including the use of (i) the letter e as the base of the natural logarithm, (ii) the letter i for the square root of -1, and (iii) the notation of  $f(x)$  to denote functions.

A remarkable feature he possessed was his ability to concentrate on his mathematical problems in the midst of bedlam and clamour caused by his several children who had the habit of playing around his desk.

Instructors of undergraduate and graduate courses should take time to point out the rich contributions of Euler to various branches of mathematics.

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## Leonard Euler (1707-1783)

... nullam quod tetigit non ornavit.

Samuel Johnson, à propos d'Oliver Goldsmith (1728-74).

Cette année marque le tricentenaire de la naissance d'Euler. Diverses célébrations et activités sont prévues à Bâle, lieu de sa naissance (voir note [1]).

L'éloge ci-dessus de Samuel Johnson (« il embellissait tout ce qu'il touchait ») conviendrait parfaitement à Euler. Euler est l'un des mathématiciens les plus illustres et les plus prolifiques que l'on connaisse. Dans presque tous les domaines des mathématiques, on trouve des théorèmes d'Euler qui contribuent de manière considérable à leur enrichissement. Évidemment, on a beaucoup écrit sur la vie et l'œuvre d'Euler. La Mathematical Association of America vient d'ailleurs de publier trois ouvrages [2, 3, 4] à l'occasion de ce tricentenaire. Une traduction de la biographie signée Emil A. Fellman [5] vient aussi de paraître chez Birkhäuser. Pour consulter une bonne critique de cet ouvrage, voir la référence [6].

C'est Euler qui a fait les premiers progrès importants menant à la preuve du dernier théorème de Fermat. En étudiant attentivement les notes de Fermat à propos du cas  $n = 4$ , il adapté la méthode de descente infinie qu'a utilisée Fermat pour fournir une démonstration de  $n = 3$ . Entre autres contributions à la théorie des nombres, mentionnons (i) la fonction « totient », aussi appelée aujourd'hui « la fonction eulérienne »; (ii) la loi de réciprocité quadratique (excluant la preuve); (iii) l'usage des fractions continues pour résoudre l'équation de Pell.

Le problème des ponts de Königsberg et la solution à ce problème proposée par Euler sont mentionnés dans les ouvrages de mathématiques récréatives et de résolution de problèmes. On dit souvent qu'Euler a étudié ce problème en construisant le graphe de la ville, où les sommets représentent les zones terrestres, et les arêtes, les ponts. En fait, Euler ne dessinait pas de graphes, puisque les graphes n'ont fait leur apparition que dans la seconde moitié du XIX<sup>e</sup> siècle. La façon dont Euler s'y est pris et comment l'analyse (topologie) et la théorie des réseaux ont découlé de ces travaux font l'objet d'un article de Brian J. Hopkins et Robin Wilson [3].

On cite souvent une anecdote selon laquelle La Grande Catherine aurait incité Euler à affronter l'athéiste Diderot en débat. On raconte qu'Euler aurait présenté à Diderot non pas une preuve, mais plutôt une équation qui, affirmait-il, prouvait l'existence de Dieu, supercherie que le non-mathématicien Diderot a été incapable de relever. Diderot avait toutefois certaines connaissances mathématiques. Il a notamment rédigé cinq mémoires honorables sur certains problèmes mathématiques. Les historiens ont établi depuis que l'épisode Euler-Diderot était sans fondement historique (voir la référence [7]).

Euler possédait une mémoire phénoménale qui lui a bien servi durant sa période de cécité, vers la fin de sa vie. On dit qu'il avait mémorisé l'Énéide de Virgile, si bien qu'il pouvait réciter l'œuvre en entier, mot pour mot, en signalant même la fin et le début de chaque page de

l'édition qu'il possérait. Deux ans avant sa mort, il a présenté à l'Académie de Saint-Pétersbourg deux articles inspirés d'un extrait de l'Énéide :

*ancora de prora jacitur, stant littore puppes*

(Les ancras tombent des proues; les poupes se dressent sur le rivage).

R. P. Agnew commence la préface de son manuel de calcul par la phrase suivante : « Il y a un élément de vérité dans le vieil adage selon lequel le manuel d'Euler, *Introductio in Analysis Infinitorum* (Lausanne 1748), est le premier grand manuel de calcul, et tous les manuels de calcul élémentaire publiés depuis sont des copies du manuel d'Euler ou des copies d'ouvrages eux-mêmes copiés d'Euler. »

Euler a introduit des éléments importants dans la notation des mathématiques modernes, notamment l'utilisation de (i) la lettre  $e$  comme base du logarithme naturel; (ii) la lettre  $i$  pour désigner la racine carrée de  $-1$ ; (iii) la notation  $f(x)$  pour désigner les fonctions.

Il possédait en outre la faculté remarquable de se concentrer sur ses problèmes mathématiques au milieu du tumulte produit par ses nombreux enfants, qui avaient l'habitude de travailler autour de son bureau.

Les enseignants de mathématiques de tous niveaux devraient prendre le temps de faire valoir, auprès de leurs élèves, les riches contributions d'Euler à divers domaines des mathématiques.

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### King of Infinite Space: Donald Coxeter, the Man Who Saved Geometry

by Siobhan Roberts

House of Anansi 2006 xv + 399 pp \$39.95

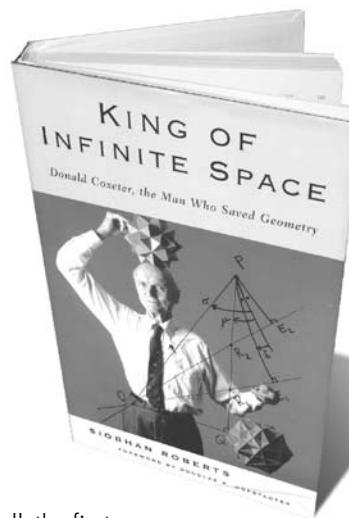
Review by Erich W. Ellers, University of Toronto

Writing a biography of a mathematician is an arduous task that should perhaps not even be attempted. Research in general and mathematical research in particular is performed in solitude and isolation. Only the results will be made public, the process remains a mystery. Writing about a scientist has two quite diverse aspects, the person and his achievements.

An unbiased opinion of an individual can perhaps best be formed fifty years after his death. The present work was started while Coxeter was still alive. It is largely based on interviews with Coxeter and with a selected group of people consisting mainly of his admirers. Coxeter died while the book was being written. So it is hardly surprising that the result gives the impression of a eulogy. The author writes about the mathematician Coxeter and about some objects of his research in a lively and entertaining fashion. She informs, sheds light on Coxeter's life, and offers insight into his personality. There is a lovely description of Coxeter preparing his departure to a conference in Hungary. The passages of the book that deal with Coxeter's childhood and student years show an introverted, serious, hard-working, and self-assured young man struggling with obstacles and difficulties at home and at boarding school. The tale of Coxeter's wooing is frank and moving. Coxeter was a man who believed that a self-imposed regimen of vegetarian food, push-ups, and other exercises will guarantee longevity, and he was rewarded. Ms. Roberts reminds us of Coxeter's brand of socializing at parties. He was always ready to pose some trick question such as "What shape is that table?" or "Did you know that an apple has no core?"

Coxeter became enchanted with polyhedra and their counterparts in higher dimensions when he was very young. This fascination accompanied him throughout his life and perhaps even intensified as he grew older. He embraced all of Euclidean geometry. So he had a palpable object as his field of research, a topic that not only has been popular through the ages, its rudiments are even taught in high school. This gave him an opening to disseminate at least some aspects of his studies to the interested public. Ms. Roberts describes in great detail Coxeter's interaction with non-mathematicians, like the architect Buckminster Fuller and the artist Maurits C. Escher, and she explains how eager Coxeter was to pass on his knowledge to anybody regardless of educational background and how much Coxeter was involved in the shaping of high school curricula. All of that characterizes the "quintessential Coxeter".

The author of this book on Donald Coxeter describes some objects of his intellectual curiosity, in particular the Platonic solids and their Schläfli symbols, fairly well. Her inclination for and involvement in geometry is remarkable. But, of course one has to keep in mind that she reveals her personal view of these objects to us. Coxeter was a productive and imaginative mathematician. Clearly he spent most of his time and energy on research. He was eager to publish his findings. He wrote a number of books and many papers. He gave numerous lectures at various universities and conferences all over the world. He



was the most ardent member of the Geometry Seminar at the University of Toronto. He was always in attendance communicating with his fellow geometers when he was in Toronto. All of this gets short shrift in Roberts's book. The clownish photo on the dust cover belies the fact that Coxeter was a serious mathematician.

The claim on page 152, "Introduction to Geometry is encyclopedic in its scope, like the Bourbaki treatise", is not tenable; after

all, the first is an undergraduate text. The animosity between Coxeter and Bourbaki, or Dieudonné as one of its representatives, is only imagined. Coxeter was well recognized by the mathematical community, especially for the seminal work that he did in the 1930s. In his book "A panorama of pure mathematics" (Academic Press 1982) where Dieudonné gives an account of the most influential mathematicians, he mentions Coxeter twice in his sections "The following have also contributed to this theory", first under "Lie groups" and then under "abstract groups". Geometry is a concept; it can neither perish nor can it be saved. Changing a few words in the title of the book would in my mind capture more accurately the impression that I got when reading the book. Copy more words of the Shakespeare quote and shorten the subtitle: "I ... count myself a king of infinite space," "Donald Coxeter, the Man."

Reprinted from the March 2007 issue of "Mathematics", published by the Department of Mathematics, University of Toronto.

\* \* \*

Review by Peter Fillmore and S. Swaminathan, Dalhousie University

Donald Coxeter was born in London, in 1907, and educated at two of the leading mathematical centres of the day: Trinity College, Cambridge, where he completed his PhD in 1931, and Princeton, where he spent two of the next five years, alternating with years at Cambridge. At the end of this period, the work which was to make him famous, on regular polytopes, was well in hand. As no suitable position in England was available, he accepted an offer from the University of Toronto. This was likely the doing of Gilbert de B. Robinson, a classmate at Cambridge who had preceded him to Toronto.

All this is recounted with style and thoroughness by Roberts. She begins her book with a vivid description of Coxeter's preparations to travel to a conference in Budapest, to present — at the age of 95 — his last paper. It was an elegant proof of the theorem: "If four circles be described to touch each other mutually, another set of four circles of mutual contact may be described whose points of contact shall coincide with those of the first four."

Chapters 2 and 3 are devoted to the development of young Donald. The story of how he developed an intuitive feeling for fourth dimension is told well; this is followed by a description of his years at Trinity, leading to his PhD thesis, "Some Contributions

to the Study of Regular Polytopes”, directed by H.F. Baker, and ultimately to his magnum opus “Regular Polytopes” (1948). In Chapter 4 we read about Coxeter’s years at Princeton and his interactions with great personalities like John von Neumann, Einstein, Lefschetz, Emmy Noether, and Hermann Weyl. Coxeter’s work during this time concentrated on the symmetries of a polytope, including writing the first four chapters of his book. The influence of Weyl’s seminar on continuous groups resulted in Coxeter’s own work on the allied symmetry groups, providing an indispensable tool in many branches of mathematics. Chapter 5 deals with Coxeter’s term as a lecturer at Trinity, his interactions with Ludwig Wittgenstein and, in close order, his engagement in May, 1936, his trip to the Oslo ICM in July, the sudden death of his father in August, and in September, the marriage and departure of the young couple for Toronto.

What did Coxeter find on his arrival in Canada? What was the state of Canadian mathematics? And how did he influence its development? Of this we find very little in the book. From Chapter 6 on, the emphasis, perhaps naturally for a journalist, is instead on personalities, and on the search for controversy: Coxeter, the champion of geometry, soldiering on almost alone against a scornful mathematical establishment.

Chapter 6 is entitled “Death to Triangles”, a reference to Dieudonné’s 1959 battle cry “A bas Euclide! Mort aux triangles!” in the fight to reform mathematics education in France. Dieudonné was associated with Bourbaki, and Roberts uses the slogan to symbolize the supposed antipathy between the establishment, as represented by Bourbaki, and Coxeter’s geometry. But the struggle is soon over, as we learn in Chapter 8: Bourbaki’s 1968 volume on Lie algebras relies on Coxeter’s work in an essential way; in fact the terms “Coxeter groups” and “Coxeter diagrams” are coined here.

Part II of the book — “Coxeter Applied” — comprises Chapters 9 to 12 and deals with Coxeter’s activities after his official retirement in 1977. We read about his interactions with such well-known mathematical amateurs as Buckminster Fuller, Douglas Hofstadter, Gordon Lang (an early designer of modems) Maurits Escher and John Robinson (a sculptor), and topics as diverse as macromolecules, sphere-packing, designer drugs and movie animation. Part III, consisting of a single chapter, brings us full circle, back to the events following the Budapest conference described in Chapter 1 and on to Coxeter’s death, in March of 2003. (See the side-bar for an amusing incident from this period.)

In writing this book, Siobhan Roberts has done a great service to Canadians and to mathematics. She has gathered a tremendous amount of information about Coxeter’s life, having interviewed, seemingly, everyone who knew him. There is a complete list of his papers, though not of his students, and over 70 pages of endnotes. What we don’t get is the larger picture, and indeed it is perhaps too soon for that.

### **How Coxeter Learned to Swear**

In his final weeks Coxeter was completely dependent on his daughter Susan. The strain of dealing with the finicky old man grew, and when one day he refused to eat the toast he had asked for because it was not cut properly into triangles, she exploded: “Dad if you don’t want f\*#!ng toast, tell me you don’t want f\*#!ng toast!” The same happened later that day with lunch when she made falafels. “Dad! Tell me if you don’t want f\*#!ng falafels!” Midafternoon, Susan left her father on his bed and said she was going to her room, in the maid’s quarters of Coxeter’s historic house, for a nap. Twenty minutes, that’s all she asked. She pulled her blind, reclined, and closed her eyes. At that very moment, her father began blowing his orange “emergency” whistle, slung at the ready around his wrist. Muttering her frustration under her breath, Susan was back at his side. “Susan,” he said, not even opening his eyes, “could you please remove my f\*#!ng shoes?” It was the first time he’d used the word in his life. “I had taught him to swear at 96,” recalled Susan. “And he taught me how horrible it sounded.”

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### The Art of Mathematics: Coffee Time in Memphis

by Béla Bollobás

Cambridge 2006 xv + 359 pp \$34.99 US papers

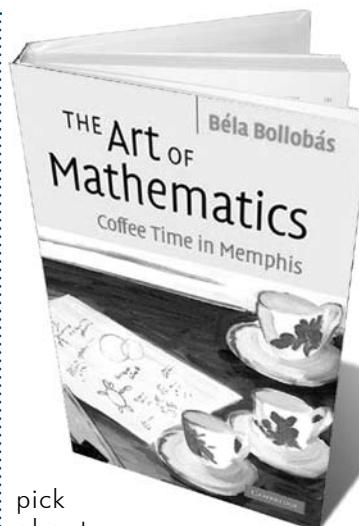
Review by Gareth Jones, University of Southampton

Problem-solving is at the heart of mathematics: we learn to do the subject by solving problems, and we teach it by posing them. However, if we are honest about it, whether at university or school we increasingly teach our students simply to solve the type of problems which we have already taught them how to solve, and we rarely challenge their ingenuity by confronting them with the unfamiliar. "It's not fair, we haven't been told how to solve problems like that" is one of the most depressing complaints a teacher is likely to hear. Unfortunately, in the real world problems rarely arrive with broad hints ("hence or otherwise") on how to solve them, and some originality is usually required. It is debatable whether the average UK mathematics graduate can cope with this, after five years of an increasingly conservative and utilitarian A-level and undergraduate syllabus. This is not the place to discuss such trends, but those who deplore them will enjoy Béla Bollobás's latest book.

Its subtitle, rather than its somewhat vague title, offers an esoteric clue to its contents: lunchtime for mathematicians at the University of Memphis is traditionally followed by a problem-solving session in the author's office, with coffee and chocolate provided as performance-enhancing stimulants. This book is a collection of such problems. First Bollobás poses 157 problems, ranging widely in difficulty and subject-matter, though many come from combinatorics or geometry. He then gives some brief hints, for those who need them, and finally the bulk of the book consists of solutions (often more than one), usually in the form of theorem and proof. In most cases there is a discussion of the history of the problem, with references to the literature and comments about further generalisations and developments. A typical example is a deceptively simple-looking problem on the psychology of batting averages, which gradually expands, via the Hardy-Littlewood maximal theorem, into an inequality in complex function theory.

Bollobás quotes Hilbert on how the professional mathematician can use problems such as these to test "the temper of his steel". It is entirely appropriate for the author, an expert fencer, to use this metaphor, and indeed the analogy between problem-solving and fencing is very apt: both require agility and ingenuity, of mind or body respectively, and both serve as safe, formalised and competitive testing-grounds for techniques required in other more serious contexts.

The book is dedicated to two great problem-posers, Paul Erdős and J.E. Littlewood, and the influence of the Hungarian and Cambridge problem-solving traditions infuses its pages. Bollobás had the perfect start to a mathematical career, namely an introduction as a teenager to Erdős, who delighted in treating young people to a variety of beautiful and



pick  
about:

fascinating problems. Many of those problems appear here, as do others posed by Littlewood, and some have been used by Bollobás as intellectual hand grenades tossed into the laps of his Trinity undergraduates and scholarship candidates.

This book is for occasional dipping into, not for systematic reading. To quote the preface 'The reader should pick out a problem or two to think about: if the problem is solved easily, fine, the next problem can come; but if it resists the initial attacks, the reader is likely to be even better off, for then the eventual solution (whether read or discovered) will be more pleasurable and beneficial.'

I strongly recommend this delightful book, not least for the charming sketches by the author's wife Gabriella. Here's one of the problems (a classic) to whet your appetite: given a finite set of points in a Euclidean space, not all on a line, there is a line that contains exactly two of the points. Have fun!

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### Letters to the Editors Lettres aux Rédacteurs

The Editors of the NOTES welcome letters in English or French on any subject of mathematical interest but reserve the right to condense them. Those accepted for publication will appear in the language of submission. Readers may reach us at [notes-letters@cms.math.ca](mailto:notes-letters@cms.math.ca) or at the Executive Office.

Les rédacteurs des NOTES acceptent les lettres en français ou anglais portant sur un sujet d'intérêt mathématique, mais ils se réservent le droit de les comprimer. Les lettres acceptées paraîtront dans la langue soumise. Les lecteurs peuvent nous joindre au bureau administratif de la SMC ou à l'adresse suivante : [notes-lettres@smc.math.ca](mailto:notes-lettres@smc.math.ca).

## **Mathematics at Berkeley: A History**

by Calvin C. Moore  
A.K. Peters 2007 341 pages \$39 US

This account of the evolution of mathematics at Berkeley takes the reader from the founding of the university in 1869 up to 1985. To tell this story a more well-placed person than Calvin Moore could scarcely be found. He joined the department as an assistant professor in 1961, becoming in 1968 vice-chair of the department, the first of the many influential administrative posts he would occupy during his career. Moore does not write for the entertainment of the general public; the emphasis is on the development of the department as an institution within the university, not on the stories of the many famous and colourful individuals who have worked there. There is a chapter on the loyalty oath controversy of the early 1950s, but this is a sober account of it, and in general controversy is down-played. The book ends with a brief chapter on the establishment of MSRI, in which Moore himself played a key role.

## **Emblems of Mind: The Inner Life of Music and Mathematics, 2nd edition**

by Edward Rothstein  
Chicago 2006 263 pages \$17 US paper

A steady stream of books exploring the relationship of mathematics and music continues to appear. Rothstein's book is a paperback reissue of the original Times Books edition of 1995. As a former graduate student in mathematics at Brandeis and of English literature at Columbia who later became a music critic for the New York Times and other leading publications, Rothstein is well-equipped for the task he sets himself: an intellectual exploration inner life of music and mathematics.

An introductory chapter is followed by one on mathematics and then one on music. There are discussions of the axiomatic method, two proofs of the infinity of the primes, limits and series, cardinality, residue classes, and homotopy classes of loops on the sphere and torus. Much of this may seem far from music, but what interests Rothstein here is how mathematicians — and musicians — think about their subjects and what similarities there might be. Subsequent chapters explore how the philosophical notions of "beauty" and "truth" manifest themselves in the two disciplines, and what they have in common across them.

The book is directed to "the literate layman, the curious listener and student who might never have studied math beyond high school or music beyond elementary school." Every reader will find something here to instruct and entertain, but many will find at least parts of it heavy going.

## **The Math Behind the Music**

by Leon Harkleroad  
Cambridge and MAA 2006 143 pages  
US \$70 hardback US \$25 paper

This book offers a lively and accessible account of the nuts and bolts of the math/music relationship, beginning with what makes a sound a note, and going on to consider why certain pitches, for example octaves and fifths, sound well together, and why the same note can sound so differently on different instruments. This brings us to the problem of tuning: the non-existence of a scale in which all octaves and fifths are perfect. There is a very good

and clear description of several of the various compromises that have been tried and the strong and weak points of each — including Pythagorean tuning, just intonation, and equal-tempering.

The next chapter considers three operations on a melody that composers have used: transposition (key change), inversion (turning the melody on its head), and the retrograde of a melody (time-reversal). Looking at combinations of these gives a gentle introduction to group theory and to a determination of the forty-eight possibilities. These operations have been used in constructing twelve-tone music, in which the composer starts with a "tone row", an arrangement of the twelve tones of the scale. The above operations can be used to prolong the basic tone row, as illustrated by compositions of Arnold Schoenberg and Milton Babbitt. This is followed by a chapter exploring the mathematics of change-ringing. This ancient art exhibits a great deal of structure, which can be described in group-theoretical terms.

The final chapters deal with random music (leading to a discussion of probability and Markov chains), the search for patterns that characterize successful pieces, the use of graphs to trace out a melody (as Villa-Lobos did with the mountain skyline of Rio de Janeiro), dance patterns, and several unsuccessful attempts to combine math and music (by both musicians and mathematicians). The book comes with a CD of musical excerpts and illustrations.

## **Yesterday and Long Ago**

by V. I. Arnold  
Springer/PHASIS 2007 229 pages

Imbued with the playful spirit of Pushkin (who is mentioned many times in the book) and illustrated with dozens of photographs from the author's personal collection, this collection of anecdotes by the distinguished mathematician Vladimir I. Arnold will delight any reader with an interest in mathematics or Russian intellectual life.

The opening lines of the preface convey the tone: "In the spring of 1999 the police found me lying unconscious next to my bike in the outskirts of Paris, and delivered me to a hospital. It took a few weeks for French doctors to bring me to consciousness. But I did not recognize my son and said about my wife: 'This woman says she is my wife.' A doctor asked me how many years we had been married. I answered correctly, 'twenty-four', and the doctor wrote down: 'arithmetical abilities are preserved'". To this accident we owe this book, as many of the stories were written to friends as Arnold lay recuperating in hospital. The original edition (2006) was in Russian, and the translation is pleasantly idiosyncratic.

The opening group of stories provide many details of Arnold's youth and education. Taken together they give an interesting picture of life in an intellectual Russian family, as his immediate family includes economists, mathematicians, physicists and writers. Next come stories about the adventures, romantic and otherwise, of prominent figures from Russian and European history, such as Henry II and Eleanor of Aquitaine, Alexander the Great, Marie Antoinette, Joan of Arc, and Catherine the Great. Most of the remaining stories have some mathematical content, but a group at the end relate to Arnold the sportsman, with tales of fishing, canoeing, swimming and skiing. The book ends with an annotated name index, which proved very useful for keeping track of the huge cast of characters.

# CMS AWARDS ANNOUNCEMENT/LAURÉATS DES PRIX DE LA SMC

## 2007 Jeffery-Williams Prize

Dr. Nassif Ghoussoub (University of British Columbia)

The Jeffery Williams Prize was inaugurated to recognize mathematicians who have made outstanding contributions to mathematical research. The first award was presented in 1968.

Dr. Nassif Ghoussoub is a leading expert in partial differential equations, variational problems, and geometric and nonlinear functional analysis. He is a prolific researcher of depth and vision who has made a strong impact in each of these areas.

His seminal 1993 monograph "Duality and Perturbation Methods in Critical Point Theory" introduced many ideas and methods from his own then-recent work into the calculus of variations, including the far-reaching min-max principle involving duality and a Morse theory "up to epsilon" to deal with borderline variational problems. The influence of this book in the field, and in particular on the recent advances in Hartree-Fock-Dirac theory by Esteban and Sere and related problems in quantum chemistry by Lewin, can hardly be overestimated.

Among the highlights of his one hundred papers is his resolution with Gui of De Giorgi's Conjecture, a long-standing open problem, first with a complete solution in dimension two, followed by major advances in dimensions up to five. This work is described as a "magnificent breakthrough", involving original ideas with other applications to the study of elliptic partial differential equations.

Dr. Ghoussoub's work with Agueh and Kang on geometric inequalities is described as a "gem". Using new ideas on the border between mathematical physics and partial differential equations, they have developed a unified framework for several important geometric inequalities based on a general comparison principle between different states of interacting gases, and discovered a remarkably encompassing energy-entropy duality formula.

Following his solution with Tzou of a 1976 conjecture of Brezis and Ekeland, in recent years Dr. Ghoussoub has developed an innovative approach to the calculus of variations. His self-dual variational principles exploit algebraic symmetries of newly devised energy functionals to prove existence results for a wide range of partial differential equations not covered by standard Euler-Lagrange theory.

Dr. Ghoussoub received an undergraduate degree from the Lebanese University of Beirut in 1973 and a doctorat d'état from Université Pierre et Marie Curie in Paris in 1979. He joined the University of British Columbia in 1977 and is now a Professor and a Distinguished University Scholar at UBC, and an Adjunct Professor at the University of Alberta. He has been a visiting professor at numerous universities in Europe and the United States. He received the CMS Coxeter-James Prize in 1990 and an honorary doctorate from Université Paris-Dauphine in 2004. He was made a Fellow of the Royal Society of Canada in 1994.

His service to the Canadian mathematical community has been nothing short of extraordinary. He is the founding director of the Pacific Institute for the Mathematical Sciences, co-founder of the MITACS network, and a founder and current Scientific Director of the Banff International Research Station. He has been a Vice-President of the CMS and served on the NSERC Grant Selection Committee and various editorial boards, including Editor-in-Chief for the Canadian Journal of Mathematics.



Le prix Jeffery-Williams rend hommage aux mathématiciens qui se sont distingués par

## Prix Jeffery-Williams 2007

Dr. Nassif Ghoussoub (Université de British Columbia)



Nassif Ghoussoub and Tom Salisbury

l'excellence de leur contribution à la recherche mathématique. Il a été décerné pour la première fois en 1968.

Nassif Ghoussoub est un grand spécialiste des équations différentielles aux dérivées partielles, des problèmes variationnels et de l'analyse fonctionnelle non linéaire. C'est un chercheur prolifique qui allie profondeur et vision, et dont la contribution dans chacun de ces domaines est remarquable.

Dans un ouvrage intitulé *Duality and Perturbation Methods in Critical Point Theory* paru en 1993, il a présenté de nombreuses idées et méthodes nouvelles tirées de ses derniers travaux de recherche sur le calcul des variations. Il a notamment introduit un puissant principe min-max avec dualité et une théorie de Morse "à epsilon près" pour pouvoir traiter des équations différentielles qui manquent de

compacité. On pourrait difficilement surestimer l'influence de cet ouvrage dans le domaine, en particulier sur les travaux récents d'Esteban et Séré dans la théorie de Hartree-Fock-Dirac, ainsi que ceux de Lewin sur des problèmes de chimie quantique.

Entre autres hauts faits de la centaine d'articles qu'il a publiés, mentionnons sa résolution, avec Gui, de la conjecture de De Giorgi, problème demeuré longtemps sans solution. Il a d'abord trouvé une solution complète en dimension deux, suivie de percées importantes allant jusqu'en dimension cinq. Ces travaux ont été qualifiés de "percées remarquables", car ils introduisent des idées originales à l'étude des équations aux dérivées partielles elliptiques.

Le travail de Nassif Ghoussoub en collaboration avec Agueh et Kang sur les inégalités géométriques est qualifié de "gemme". Faisant appel à de nouvelles idées à la frontière de la physique mathématique et des équations aux dérivées partielles, ils ont défini un cadre de travail unifié pour plusieurs inégalités géométriques importantes, basé sur un principe général pour comparer les différents états de gaz en interaction. Ils ont en outre découvert une formule remarquable de dualité entre des concepts d'énergie et d'entropie.

Après avoir résolu avec Tzou une conjecture de Brézis et Ekeland datant de 1976, Nassif Ghoussoub a consacré les dernières années à l'élaboration d'une approche innovatrice au calcul des variations. Ses principes variationnels auto-duaux exploitent les propriétés algébriques des nouvelles fonctionnelles d'énergie qu'il réussit à associer à une grande variété d'équations aux dérivées partielles non-traitables par la théorie classique d'Euler-Lagrange.

Nassif Ghoussoub a obtenu son baccalauréat de l'Université libanaise (Beyrouth) en 1973 et un doctorat d'État de l'Université Pierre et Marie Curie (Paris) en 1979. Il s'est joint au corps professoral de l'Université de la Colombie-Britannique (UBC) en 1977, où il est désormais professeur titulaire avec une chaire de chercheur distingué de l'université, en plus d'être professeur associé à l'Université de l'Alberta. Il a en outre été professeur invité de nombreuses universités d'Europe et des États-Unis. Il a reçu le prix Coxeter-James de la SMC en 1990 et un doctorat Honoris-Causa de l'Université Paris-Dauphine en 2004. Il est membre de la Société Royale du Canada depuis 1994.

Son travail pour la communauté mathématique canadienne et internationale est tout simplement extraordinaire. Il est le directeur fondateur du Pacific Institute for the Mathematical Sciences (PIMS), co-fondateur du réseau de centres d'excellence MITACS, ainsi que fondateur et directeur scientifique actuel de la Station de Recherche Internationale de Banff (BIRS). Il a aussi présidé le Comité de sélection des subventions du CRSNG, a été vice-président de la SMC, ainsi que rédacteur en chef du Journal Canadien de Mathématiques.

# CMS AWARDS ANNOUNCEMENT/LAURÉATS DES PRIX DE LA SMC

## 2007 Krieger-Nelson Prize

Dr. Pauline van den Driessche (University of Victoria)

The Krieger-Nelson Prize was inaugurated to recognize outstanding research by a female mathematician. The first prize was awarded in 1995.

Dr. Pauline van den Driessche is one of Canada's leading applied mathematicians, known for her work in mathematical biology and linear algebra.

Her major impact in mathematical biology has been the application of new mathematical methods to the study of dynamics of epidemics. The referees cite her work on epidemic models with variable population size, the role of immigration on disease dynamics, the possibility of multiple steady states, and reproduction numbers and sub-threshold endemic equilibria for compartmental models of disease transmission. The mathematical tools she has developed have been applied by her and others to multi-city disease dynamics, HIV-AIDS control, and, more recently, West Nile virus outbreak predictions.

Her work in linear algebra includes a famous paper with Jeffries and Klee in the Canadian Journal of Mathematics in which they characterize sign-stable matrices, as well as a series of papers in factorization theory. Many of the deep questions in matrix theory she has worked on have arisen from problems in biological modeling.

Dr. van den Driessche has played a major leadership role in the Canadian applied mathematics community and served as a mentor to a growing number of young mathematicians. A look at her impressive list of about 150 publications reveals an unusually large number of collaborators, many of them students and junior colleagues. The referees comment on her "tremendous productivity and vision" and describe her as an example and inspiration for new generations of mathematical researchers, women and men alike.

Dr. van den Driessche received a Bachelor of Science degree in 1961 and a Master of Science degree in 1963, both at Imperial College, and a Ph.D. in 1964 from University College of Wales, Aberystwyth. She joined the University of Victoria in 1965 and has been a Professor in the Department of Mathematics and Statistics there since 1983. She is currently cross-appointed in the Department of Computer Science.

She has organized numerous conferences, served on NSERC's Grant Selection Committee from 1992 to 1995, and served on the CMS Board of Directors and the Council of the Canadian Applied Mathematics Society (now CAIMS). She is an editor of the Canadian Applied Mathematics Quarterly and the SIAM Journal of Applied Mathematics.

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Le prix Krieger-Nelson rend hommage aux mathématiciennes qui se sont distinguées par l'excellence de leur contribution à la recherche mathématique. Il a

## Prix Krieger-Nelson 2007

Dr. Pauline van den Driessche (Université de Victoria)

été décerné pour la première fois en 1995.

Pauline van den Driessche est une sommité canadienne des mathématiques appliquées, connue surtout pour ses travaux en biologie mathématique et en algèbre linéaire.

Sa contribution principale en biologie mathématique est l'application de nouvelles méthodes mathématiques à l'étude de la dynamique des épidémies. On souligne entre autres ses travaux sur des modèles d'épidémie avec population de taille variable, le rôle de l'immigration dans la dynamique des maladies, la possibilité d'équilibres multiples, et des nombres de reproduction et d'équilibres endémiques sous un seuil pour des modèles compartimentés de transmission de maladie. À l'instar d'autres mathématiciens, elle applique ses instruments mathématiques à la dynamique de la propagation des maladies entre les villes, au contrôle du VIH-SIDA et, plus récemment, aux prédictions relatives à la propagation du virus du Nil occidental.

Au nombre de ses travaux en algèbre linéaire, mentionnons son célèbre article publié en collaboration avec Jeffries et Klee dans le Journal canadien de mathématiques, dans lequel ils caractérisent les matrices de signe stable, ainsi qu'une série d'articles sur la théorie de la factorisation. Un bon nombre des questions de fonds en théorie matricielle qu'elle a étudiées découlait de problèmes de modélisation biologique.

Pauline van den Driessche occupe une place importante dans le milieu des mathématiques appliquées au Canada et fait figure de mentor pour un grand nombre de jeunes mathématiciens et mathématiciennes. Il suffit de jeter un coup d'œil à son imposante liste publications (environ 150) pour constater le nombre extraordinaire de personnes avec qui elle a travaillé, dont un grand nombre d'étudiants et de jeunes collègues. Les membres du comité de sélection ont souligné sa "productivité et sa vision exceptionnelles", et l'ont décrite comme un modèle pour les nouvelles générations de chercheurs et de chercheuses en mathématiques.

Pauline van den Driessche a obtenu un baccalauréat et une maîtrise ès sciences de l'Imperial College en 1961 et en 1963 respectivement, ainsi qu'un doctorat de l'University College of Wales à Aberystwyth en 1964. Elle s'est jointe à l'Université de Victoria en 1965 où elle est professeur au Département de mathématiques et de statistique depuis 1983. En ce moment, elle a une double affectation avec le Département d'informatique.

Elle a organisé de nombreux congrès, siégé au Comité de sélection des subventions du CRSNG de 1992 à 1995 ainsi qu'au conseil d'administration de la SMC et à la Société canadienne de mathématiques appliquées et industrielles. Elle fait partie de l'équipe de rédaction du Canadian Applied Mathematics Quarterly et du Journal of Applied Mathematics de la SIAM.

## CMS Prize Lecturships and Awards Programmes - Prix et bourses de la SMC

The most up-to-date information concerning all CMS Prize Lecturships & Awards programmes, including complete lists of recipients, can be found at: [www.cms.math.ca/Prizes/](http://www.cms.math.ca/Prizes/)

Vous trouverez l'information la plus récente sur les prix et bourses de la SMC, y compris les listes de lauréats, sur le site Web suivant : [www.smc.math.ca/Prizes/](http://www.smc.math.ca/Prizes/)

# CMS AWARDS ANNOUNCEMENT/LAURÉATS DES PRIX DE LA SMC

## 2007 Excellence in Teaching Award

Dr. Brian Forrest (University of Waterloo)

The CMS Excellence in Teaching Award focuses on the recipient's proven excellence as a teacher at the undergraduate level as exemplified by unusual effectiveness in the classroom and/or commitment and dedication to teaching and to students. The prize recognizes sustained and distinguished contributions in teaching at the post-secondary undergraduate level at a Canadian institution.

Brian Forrest's outstanding teaching has previously been recognized by the University of Waterloo, most notably in 2000 through Waterloo's Distinguished Teaching Award. His citation at that time spoke to his "ability to convey the beauty and elegance of mathematics to students at all levels", and to his contagious excitement and enthusiasm for teaching mathematics. Former students refer to him as the best university instructor they have encountered - someone who stands out both as a lucid expositor and as a caring mentor.

His colleagues describe him as the most effective and committed teacher they know, someone who consistently obtains stellar evaluations and who devotes uncounted hours to his students. He is patient and thorough, and succeeds at delivering rigorous and demanding material in ways that resonate with students. His letter of nomination describes his "meticulous approach to teaching, integrating homework assignments and lectures so carefully that students not only practice past skills, but also begin to struggle with new concepts in their homework just as they are being introduced in lecture." In his role as undergraduate advisor, he has carefully guided hundreds of students. He is a frequent mentor of undergraduate research projects, the author of extensive undergraduate course notes, and the co-developer of a respected interactive CD-ROM now used at the University of Waterloo for distance education in mathematics.

In parallel with his achievements in teaching, Dr. Forrest has been a driving force for curricular development in his department and faculty. Together with colleagues, his accomplishments in this area include completely restructuring the Waterloo calculus curriculum, developing an innovative new program in computational mathematics, overhauling the general program in mathematics to give it both cohesion and focus, and introducing specialized options that combine mathematical study with engineering, teaching, or finance.

Brian Forrest received his Ph.D. from the University of Alberta in 1987 under the supervision of Professor A.T. Lau. After two years at Queen's University as a Visiting Assistant Professor, he joined the Pure Mathematics department at the University of Waterloo, where he has taught for the last 18 years. In addition to his regular academic duties, he served a four-year term as Chair of his department. He is currently on leave from his appointment as Associate Dean for Co-operative Education in the Faculty of Mathematics. Dr. Forrest's research is in the field of abstract harmonic analysis.



## Prix d'excellence en enseignement 2007

Dr. Brian Forrest (Université de Waterloo)



Brian Forrest and Tom Salisbury

des contributions exceptionnelles et soutenues en enseignement au collégial et au premier cycle universitaire dans un établissement canadien.

L'excellence de l'enseignement du professeur Forrest a été déjà reconnue par l'Université de Waterloo, plus notamment en 2000 où il a remporté le prix Distinction en enseignement de l'Université de Waterloo. Sa présentation pour ce prix à ce temps a parlé de sa "capacité de rendre la beauté et l'élegance des mathématiques accessibles aux étudiants à tous les niveaux", et de son enthousiasme et dynamisme contagieux pour l'enseignement des mathématiques. Ses anciens étudiants se réfèrent à lui comme le meilleur professeur qu'ils ont rencontré - quelqu'un qui se distingue comme un instructeur lucide et un mentor bienveillant.

Ses collègues le décrivent comme le professeur le plus efficace et le plus dévoué qu'ils connaissent, quelqu'un qui obtient uniformément des excellentes

évaluations et qui consacre des heures innombrables à ses étudiants. Il est patient et exhaustif, et il réussit à expliquer des notions rigoureuses et exigeantes de manière à ce qu'elles soient accessibles aux étudiants. Sa lettre de nomination décrit "son approche méticuleuse de l'enseignement, sa soigneuse intégration des devoirs et cours de sorte que les étudiants pratiquent non seulement les compétences déjà vues, mais ils commencent également à travailler avec de nouveaux concepts en même temps qu'ils sont présentés dans le cours." Dans son rôle comme conseiller d'études sous-graduées, il a soigneusement guidé des centaines d'étudiants. Fréquemment, il sert comme un mentor pour des projets de recherche sous-gradués, il est aussi l'auteur d'une large variété de notes de cours, un co-développeur d'un CD-ROM interactif respecté maintenant utilisé à l'Université de Waterloo pour l'éducation à distance en mathématiques.

En parallèle avec ses réussites dans l'enseignement, Dr. Forrest a été une force motrice pour le développement du curriculum autant au sein de son département qu'à sa faculté. Ensemble avec des collègues, ses accomplissements dans ce domaine incluent la restructuration complète du curriculum de calcul à l'Université de Waterloo, le développement d'un nouveau programme innovateur en mathématiques informatiques, la modernisation du programme général en mathématiques pour le rendre plus cohérent et plus concentré, et l'introduction des options spécialisées qui combinent l'étude des mathématiques avec la génie, l'éducation ou les finances.

Brian Forrest a obtenu son Ph. D. en mathématiques en 1987, sous la direction du professeur A.T. Lau, à l'Université d'Alberta. Il a passé deux années à l'Université Queen's comme professeur visiteur adjoint avant de se joindre le département de mathématiques pures de l'Université de Waterloo où il a enseigné pour les dernières 18 années. En plus de ses fonctions académiques régulières, il a servi un mandat de quatre ans comme directeur de son département. Il est présentement en congé de sa responsabilité comme doyen adjoint pour l'éducation coopérative dans la faculté des mathématiques. La recherche de Dr. Forrest est dans le domaine de l'analyse harmonique abstraite.

Le Prix d'excellence en enseignement de la SMC tient surtout à récompenser l'excellence reconnue d'un enseignant ou d'une enseignante au niveau postsecondaire telle qu'illustrée par son efficacité exceptionnelle en classe ou son engagement et son dévouement envers l'enseignement et les étudiants. Ce prix récompense

# CMS AWARDS ANNOUNCEMENT/LAURÉATS DES PRIX DE LA SMC

## 2007 Distinguished Service Award

Dr. Graham P. Wright (University of Ottawa)

The CMS Distinguished Service Award was created in 1995 to recognize individuals who have made sustained and significant contributions to the Canadian mathematical community and, in particular, to the Canadian Mathematical Society. The Distinguished Service Prize is given annually in recognition of sustained and significant service to the CMS or the Canadian mathematical community.

Graham Wright has been Executive Director of the CMS since 1979 and throughout that time has profoundly

influenced and shaped the Society. His skillful and dedicated service to the CMS has been a major factor in the dramatic growth and transformation of the Society. Dr. Wright has been a key part of virtually all aspects of the Society's operations, including his service as Managing Editor of many of the CMS's scientific publications, his ongoing work as an organizer of Math Camps and Mathematics Competitions (notably his work for the 1995 International Mathematical Olympiad held in Toronto), and his tireless efforts in support of the Society's committees and scientific meetings. He has helped the Society develop its web-based electronic services, and has guided the outreach and fundraising activities of the Society. His work in building up and overseeing the CMS Executive Office in Ottawa, as well as other CMS editorial offices, helped establish the highly professional permanent infrastructure that supports the work of the Society's many volunteers. The CMS would not have its current impact on the professional mathematical community, nor its current wide range of programs in research, publication, and mathematics education, without the extraordinary contributions of Graham Wright.

Indeed, the singular nature of Dr. Wright's contributions to the Society has led the CMS Board of Directors to announce its intention to rename its Distinguished Service Award, as of 2008, as the Graham Wright Award for Distinguished Service.

Dr. Graham Wright was born in England and obtained his B.Sc Honours Degree at the University of Surrey in 1967. He earned his Ph.D. in 1971, also from the University of Surrey, under the supervision of Professor Felix Arscott. After one year as a visiting graduate student at the University of Calgary, Wright joined the Department of Mathematics at the University of Ottawa in 1970. In 1975, he received an Ontario Confederation of University Faculty Associations (OCUFA) Teaching Award for Outstanding Contributions to University Teaching. His research interests are in doubly-periodic differential equations.

Graham Wright has been a Co-organizer of the CMS-University of Ottawa Math Camps since 2000 and of the Math Horizons Day for Ottawa area high school students since 2002.

Graham Wright, together with Dr. Mayer Alvo, was responsible for the establishment of two co-operative education programs in Mathematics and Computing. These programs, established in 1980, were the first co-op programs offered at the University of Ottawa. Wright was a past-chair of the NSERC Grant Selection Committee for Scholarly Publications, the Assistant Chief Operating Officer for the 36th International Mathematical Olympiad which was held in Canada in 1995. Since 1994 he has served on the Selection Committee for the Prime Minister's Awards for Teaching Excellence.



## Prix pour service méritoire 2007

Dr. Graham P. Wright (Université d'Ottawa)



Eddy H.E.A. Campbell, Katherine Heinrich, Graham P. Wright and Tom Salisbury

service méritoire est remis tous les ans à une personne qui a rendu des services exceptionnels à la SMC ou à la communauté mathématique canadienne.

Graham Wright est directeur administratif de la SMC depuis 1979. Durant cette période, il a grandement influencé et transformé la Société. Sa compétence et son dévouement envers la SMC ont été les principaux instruments de la croissance fulgurante et de la transformation de la SMC durant ces années. Graham Wright a touché

à pratiquement toutes les activités de la Société, notamment en tant que rédacteur gérant de plusieurs des publications scientifiques de la SMC, par son soutien continu en tant qu'organisateur des camps de mathématiques et des concours mathématiques (en particulier sa contribution à l'organisation de l'Olympiade internationale de mathématiques 1995 tenue à Toronto) et par son travail inlassable dans les comités et les réunions scientifiques de la Société. Il a également contribué à l'évolution des services web de la Société et orienté le développement de ses activités de sensibilisation et de financement. Sa contribution à l'organisation et la direction du bureau administratif de la SMC à Ottawa, ainsi que des autres bureaux de rédaction de la SMC, a doté la Société d'une infrastructure permanente et extrêmement professionnelle qui appuie le travail de ses nombreux bénévoles. La SMC n'aurait pas l'influence qu'elle a actuellement sur la communauté mathématique professionnelle, et elle n'offrirait pas non plus une telle offre de programmes de recherche, de publication et d'éducation mathématique sans la contribution extraordinaire de Graham Wright.

Pour souligner la nature exceptionnelle de l'œuvre de Graham Wright, le Conseil d'administration de la SMC a d'ailleurs l'intention de renommer son Prix pour service méritoire. À compter de 2008, ce prix s'appellera donc le « Prix Graham-Wright pour service méritoire ».

Né en Angleterre, Graham Wright a obtenu un baccalauréat en sciences avec spécialisation de l'Université de Surrey en 1967. Il a terminé son doctorat en 1971, aussi à Surrey, sous la direction du professeur Felix Arscott. Après un séjour d'un an comme étudiant diplômé invité à l'Université de Calgary, il se joint au Département de mathématiques de l'Université d'Ottawa en 1970. En 1975, il reçoit un prix d'excellence en enseignement de l'Union des associations des professeurs des universités de l'Ontario (UAPUO) pour sa contribution exceptionnelle à l'enseignement universitaire. Ses intérêts de recherche portent principalement sur les équations différentielles doublement périodiques.

Graham Wright est de plus l'un des organisateurs des camps de mathématiques organisés conjointement par la SMC et l'Université d'Ottawa depuis 2000, et de la journée Math Horizons pour les élèves du secondaire d'Ottawa depuis 2002.

En collaboration avec Mayer Alvo, Graham Wright est à l'origine de la création de deux programmes d'enseignement coopératif (coop) en mathématiques et en informatique. Crées en 1980, ces programmes sont les premiers programmes coop offerts à l'Université d'Ottawa. Graham Wright a été président sortant du Comité de sélection des subventions du CRSNG pour les publications savantes et adjoint au chef des opérations de la 36e Olympiade internationale de mathématiques, tenue au Canada en 1995. Depuis 1994, il siège aussi au comité de sélection des Prix du premier ministre pour l'excellence dans l'enseignement.

Créé en 1995, le Prix de la SMC pour service méritoire récompense les personnes qui contribuent de façon importante et soutenue à la communauté mathématique canadienne et, notamment, à la Société mathématique du Canada. Le Prix pour

There are a great many mature adults who lacked the opportunity of a university education when they were younger. There are others who, because of finances or distance, are unable to actually attend an institute of higher learning. Yet these people are zealous for the opportunities that possessing advanced qualifications can bring, either for their economic and social wellbeing or, more idealistically, for their intellectual growth. For this reason, many universities have extension and correspondence programs. Such programs bring their own particular challenges, as almost everything has to be carried on at a distance. Fortunately, the web has created a situation where there can be a rapid transmission of materials and interchange of information and ideas.

There are a few institutions, like the pioneering Open University in the U.K., that exist for the express purpose of outreach education. We have a notable example in our own country, Athabasca University in northern Alberta. I asked the academic coordinator in mathematics, Julie Peschke, to tell us about this institution and its functions.

Detailed information about the mathematics program and its courses can be found on the website [www.athabascau.ca](http://www.athabascau.ca). Click on "Departments and Centres", then on "Science", and finally on "Mathematics". Or you can go more directly to <http://131.232.13.11/science.nsf/resourcesmath>. The permanent URL of the university's mathematics website is <http://science.athabascau.ca/Mathematics/index.php>.

**Distance learning in mathematics at Athabasca University**  
by J. Peschke  
Academic Coordinator in Mathematics  
Athabasca University

### Canada's "Open University"

The Columbia Icefield is a rather magnificent mass of ice covering a high plateau between Mount Columbia, the highest point in Alberta, and Mount Athabasca, and is located along the Alberta-British Columbia border between the towns of Banff and Jasper. Arising out of this massive ice flow emerges the water source that becomes the Athabasca River which then continues its journey north through Jasper National Park, veers northeast, passes Fort McMurray (oil country) and eventually empties into Lake Athabasca, some 1231 kilometres downstream. All of this may be familiar geography to the well-travelled tourist, but it is less known that, ensconced in the Athabasca River basin about 150 kilometres north of Edmonton lies the Town of Athabasca.

Once called the "Gateway to the North", this tiny town (having a stable population of 2415 inhabitants for the last six years running) may now quite properly be called a virtual confluence of the world, because today it is the home of Athabasca University (AU), Canada's "Open University". In the last year, AU was the alma mater of almost 37,000 students from all over the world, including

- a nurse working in Newfoundland;
- a student enrolled in a college in southern British Columbia;
- an Officer Cadet studying engineering at the Royal Military College of Canada in Ontario;
- a postdoctoral fellow doing pulmonary research in Alberta;
- a Canadian currently working in Namibia in southern Africa;
- the coordinator of the Ethiopian Nurses Needlestick Injury Research Project living in Ethiopia;

- the daughter of a USAID GIS Advisor, stationed in Jakarta, Indonesia;
- an English-as-a-second-language teacher on an assignment in South Korea;
- a head nurse working in the emergency room of a hospital in Iran;
- a young high school student resident in the southern United States;

— and those are the ones I know about!

Athabasca University was set up in 1970 by the Alberta Government as a university whose mandate was to provide accessibility to those for whom universities were typically "inaccessible": those living in remote areas; those with physical, sensory, psychological, or learning disabilities; those lacking formal qualifications for entry into a standard university program; and those unable to attend courses in a classical university classroom setting because of work or family commitments. Today approximately 56% of our students are 25 years of age or older and about 60% of our program students are employed full-time while studying.

One of the more interesting examples of how distance learning can work for some students is the following. One gentleman fulfilled a mathematics requirement for his PhD program in physiotherapy from an Australian university by taking a statistics course through Athabasca University, all while living and working in Calgary.

Canada's First Nations peoples have also taken advantage of the opportunity to study at a distance. Literally from sea (the Chapel Island First Nations people in the Bras d'Or Lakes area of Cape Breton Island on the east coast) to sea (the Sliammon First Nations people near Powell River on the Strait of Georgia on the west coast) and from the remote north (the Fort Severn First Nations people on the shores of Hudson Bay, the most northerly community in Ontario) to the remote south (the Seton Lake First Nations people in Shalalth, today one of the most remote communities in southern British Columbia), aboriginal students from all parts of Canada have enrolled in a variety of courses through AU.

In addition, Athabasca University is a member of Alberta North, a consortium of post-secondary institutions throughout northern Alberta and the Northwest Territories that provides distance education options for people living in Canada's northern regions. We collaborate with partner institutions to offer university courses on-site at their campuses. These courses are delivered by way of a "grouped study" model (our term for a traditional classroom setting). Some grouped study courses may include videoconferencing, teleconferencing, or a variety of online components.

While the emphasis is towards providing educational opportunities to adults, we also allow enrollments of individuals as young as 16 years of age. The youngest student I ever tutored in a mathematics course at AU was an entirely home-schooled student from Quebec. His mother initially wanted permission to register him in an introductory course in differential equations. As he had never been assessed by any formal educational institution, neither in his home province or elsewhere, we required that he take our two remedial mathematics courses (the second of which is recognized as an Alberta university-entrance Pure Mathematics 30 equivalent) before proceeding. The home-study environment to which he had become accustomed throughout his entire school-age education appeared to dovetail seamlessly into the distance education model of

learning. Despite his youth, the self-discipline he had acquired thereby enabled him to complete the entire remedial program with an A+ average within four months.

In December 1993, the ministers responsible for education in the four western provinces, the Yukon Territory and the Northwest Territories signed the Western Canadian Protocol for Collaboration in Basic Education (WCP) covering kindergarten to Grade 12. In February 2000, Nunavut also joined the WCP. This subsequently led to what is now known as the Western and Northern Canadian Protocol (WCNP), one of whose more recent cooperative efforts includes the creation of a common curriculum framework for the public school programs in mathematics throughout all of Western Canada and the three northern territories. Concurrently, a complete revision of the high school mathematics curriculum has been undertaken by the Alberta government. Athabasca University was one of the post-secondary educational institutions asked to be a part of the Articulation Committee drawn up to provide input into this revision process. The common hope is that the Alberta government initiative and the efforts of the WCNP will have enough common ground to form a truly transferable curriculum in high school mathematics across this huge region which transcends provincial boundaries and reaches out to the most distant climes of our land.

### **Teaching mathematics at a distance**

The success of our learning-at-a-distance programs may be attributed, in part, to our "tutorial system" and our "openness" with year-round registration and no formal pre-requisites for all first-year courses.

While there are no barriers in the form of prior achievement standards to taking our Introductory Calculus, Statistics, Linear Algebra and other first year courses without adequate pre-requisite knowledge, there are advisories. An online Mathematics Diagnostic Assessment Test is open to students wishing to do a self-evaluation of their basic mathematical skills. At each of the three levels of the test, based on the scores obtained, the students are advised accordingly. Two remedial mathematics courses are available for those who decide to upgrade their skills before embarking upon the program of their choice.

As our students are primarily "individualized study" students, the courses are not paced, and students may register in any program at any time. If they register before the tenth day of the month, their course start date will be the first day of the following month — year round. The only stipulation is that the student initially has six months from their course start date to complete it; for those unable to do so, three 2-month extensions are allowed.

Once enrolled, each student is mailed a course materials package and access information to online course materials. In addition, each is assigned an academic tutor who may be contacted by toll-free telephone within Canada and the United States, or by email from all points of the globe. This tutorial system is in place to provide an alternative to the "face-to-face" classroom encounter between student and professor. Tutors are available at fixed times for telephone queries and any time for email, with appropriate turn-around times for response. Increasingly, students are choosing to communicate with their tutors by email.

The course materials package typically includes a text book, a students' solutions manual, a study guide to the course, an assignment manual and a student manual that contains general information about the course, such as the inclusion of one or more study schedules, advisories about assignments and exams,

details of course structure and method of evaluation.

Students choose the dates and times they wish to write their examinations. Exams are typically written in the locality of the student's place of residence. Arrangements for approved institutions with proper invigilators where students may write the exams are made by the students with the Examination Unit.

At the present time, we offer some thirteen university-level mathematics courses, including two senior projects courses that are considered springboards into a masters program. The latter two courses are for students who wish either to carry out a specifically designed project in their area of mathematical interest, to extend their knowledge in a particular subject through an appropriate reading program or to obtain formal recognition of mathematics-related skills and training they have received on the job.

One of the more recent registrants in both of the projects courses was a young woman from Germany. For her projects, she chose two reading courses. The first involved a book on numerical analysis that was to provide the mathematical foundations and the basic theoretical properties of numerical methods of scientific computing applicable within the areas of analysis, linear algebra, geometry, approximation theory, functional equations, and optimization. For the second reading course, she chose a graduate level text on Probability Theory. It covered topics beginning with the axioms of probability to the definition of probabilities on finite or countable spaces, through the construction of a probability measure and integration using that measure, all the way to convergence of random variables, the Central Limit Theorem, a discussion of L2 and Hilbert spaces, and finally ending with an introduction to Martingale Theory.

Personally, I considered this a rather challenging program of studies. Her direct supervisor was a Professor in the Applied Sciences from a university in Frankfurt, German. He will receive a stipend from Athabasca University for his work as her mentor.

Up to the present time, those taking mathematics courses with us generally use them as transfer credits to other programs of study or as mathematics requirements. However, we are now making progress to the formation of a Bachelor of Science (Specialization in Mathematics) degree program with a vision to a thesis-based Master's program in Applied Mathematics.

Ongoing research and experimental projects have included the use of a "Whiteboard" with and without telephone communication and the creation of an online mathematics course that is able to deliver the learning outcomes of a regular university course. Challenges include the testing of "mathematical problem solving techniques" and "algorithmic process" using a fully online system.

Visit us online and discover how a little town in central Alberta can be "home" to so many students worldwide.

### **More books on solving problems**

In the May 2007 issue of these Notes, I discussed a number of books designed to help students become better problem solvers. Since there are so many fine books, I will augment the list from time to time. There is a book over a decade old that can be highly recommended, one of whose authors, Cecil Rousseau of the University of Memphis, has a well established reputation as a problem solver and setter and coach of students.

**Edward Lozansky, Cecil Rousseau, Winning solutions**  
Springer-Verlag, New York, 1996 ISBN 0-387-94743-4

This book can be used for self-study by advanced high school and undergraduate students, as well as by a lecturer for a course in problem solving. It provides a brief review of basic theory in the topics of its three chapters, Numbers, Algebra and Combinatorics, and a large number of worked examples. There are exercises for the reader and a few Olympiad problems, mostly from the USAMO and IMO at the end of the chapters; hints and some solutions are provided. The home of the author of the second book is the University of Colorado at Colorado Springs, where he has been heavily involved in competitions and mathematics clubs. His web page is [www.uccs.edu/asoifer](http://www.uccs.edu/asoifer).

**Alexander Soifer, Mathematics as problem solving**  
Center for Excellence in Mathematics Education, 885 Red Mesa Drive, Colorado Springs, CO 80906  
1987 ISBN 0-940263-00-9

The intended audience of the book consists of "high school and college students, teachers and everyone else desiring to experience the mystery and beauty of mathematics". While less comprehensive and more idiosyncratic than the other books I have discussed, it is an enjoyable read. Perhaps the best way to convey the flavour of this book is to quote from the preface: "This is the book I am going to write all my life. That is why I welcome so much your comments, corrections, ideas, alternative solutions, suggestions to include other methods or to cover other areas of mathematics. ... One can fairly make the argument that this book is raw, unpolished. Perhaps it is not all that bad: sketches of Modigliani give me, for one, so much more than sweated out oils of Old Masters. Maybe a problem solving book ought to be a sketch book!"

Indeed, the book reads like an extended conversation on interesting problems. After an introductory chapter introducing some main concepts and approaches, he treats in turn numbers, algebra, geometry and combinatorics.

## NEWS FROM THE FIELDS INSTITUTE

The Fall-2007 thematic program of the Fields Institute for Research in the Mathematical Sciences will be *Operator Algebras*, organized by George Elliott (chair, Toronto), Dietmar Bisch (Vanderbilt), Joachim Cuntz (Münster), Kenneth Davidson (Waterloo), Thierry Giordano (Ottawa), and Roland Speicher (Queen's). The speakers in the Distinguished Lecture Series will be Uffe Haagerup (Odense) and (in May) Alain Connes (Collège de France). A workshop Noncommutative Dynamics and Applications took place on July 16 – 20, and four more are scheduled:

- Sept. 17 – 21, *Free Probability, Random Matrices, and Planar Algebras*
- Oct. 29 – November 2, *von Neumann Algebras*
- Nov. 12 – 16, *Structure of  $C^*$ -Algebras*
- Dec. 11 – 15, *Operator Spaces and Quantum Groups*

There will also be four graduate courses: Introduction to *Operator Algebras* (Man-Duen Choi (Toronto)), Ken Davidson (Waterloo), *Structure of  $C^*$ -Algebras* (George Elliott (Toronto), Chris Phillips (Oregon), Mikael Rørdam (Odense)), *Free Probability* (Roland Speicher (Queen's), Jamie Mingo (Queen's)). The course *Functional Analysis* (Andrew Toms (York)) was held during the summer.

Please see

[www.fields.utoronto.ca/programs/scientific/07-08/operator\\_algebras/](http://www.fields.utoronto.ca/programs/scientific/07-08/operator_algebras/)  
for up-to-date information.

Other Fall events at the Institute:

- Sept. 4 – 7, *Data Assimilation Workshop*
- Sept. 27 – 28, Distinguished Lecture Series in Statistical Science, Persi Diaconis (Stanford), *Mathematics and Magic Tricks*
- Oct. 30, *The Nathan and Beatrice Keyfitz Lectures in Mathematics and the Social Sciences*, Jon Kleinberg (Cornell)
- Nov. 9 – 10, *Conference in honour of the 60th Birthday of Professor Andreas R. Blass*

The thematic program for the Winter/Spring-2008 term will be *New Trends in Harmonic Analysis*, organized by Izabella Laba (chair, UBC), Alex Iosevich (Missouri-Columbia), Michael Lacey (Georgia Tech), Eric Sawyer (McMaster).

Workshops planned are

- Jan. 7 – 11, *Recent Advances in Operator Theory and Function Theory*
- Feb. 18 – 24, *Harmonic Analysis*
- Apr. 5 – 13, *Clay-Fields Conference on Additive Combinatorics, Number Theory, and Harmonic Analysis*

The Coxeter Lecture Series will be delivered by Jill Pipher (Brown) and the Distinguished Lecture Series by Tim Gowers (Cambridge) (to be confirmed).

**Future thematic programs:**

Fall-2008, *Arithmetic Geometry, Hyperbolic Geometry and Related Topics*  
Winter/Spring-2009, *O-Minimal Structures and Real Analytic Geometry*  
Winter/Spring 2010, *Financial Mathematics*

**Application deadlines:**

- Thematic programs: Aug. 31, Mar. 15.
- Workshops, seminars, conferences, summer schools: Oct. 15.
- CRM-Fields-PIMS Prize: Nov. 1.
- Coxeter Lecture Series, Distinguished Lecture Series, Distinguished Lecture Series in Statistical Sciences (nominations): Oct. 15.
- Postdoctoral Fellowships: Dec. 7.
- Visiting memberships: no special deadlines, but early application is advised.
- Fields Institute Fellows (nominations): Feb. 15.

Consult [www.fields.utoronto.ca/proposals/](http://www.fields.utoronto.ca/proposals/) for further information.

To be informed of upcoming Scientific Activities, please subscribe to our mailing list at  
[www.fields.utoronto.ca/maillist](http://www.fields.utoronto.ca/maillist)

Complete and up-to-date information on all Fields Institute activities can be found at  
[www.fields.utoronto.ca](http://www.fields.utoronto.ca)

Eddy Campbell (Memorial) and departing Vice Presidents Jason Brown (Dalhousie), Ram Murty (Queen's), Ed Perkins (UBC), and Bruno Rémillard (HEC) for the dedication and fine service they have given to the CMS. It has been a pleasure and an honour working with all of them. I now look forward to working with our new **Board and Executive**, including President-Elect Tony Lau, and Vice Presidents Michael Bennett (UBC), Gordon MacDonald (UPEI), Catherine Sulem (Toronto), and Yvan Saint-Aubin (Montreal). A word of explanation is in order here. Members may recall that Rachel Kuske was originally elected as VP (West). Subsequently, Rachel has become Department Head at UBC, and continues as a GSC chair for NSERC, leaving it impossible for her to assume further duties with the CMS. Michael Bennett kindly agreed to replace her, and has been appointed as Vice President under the authority of the Board.

Turning from news to mathematics, the scientific program at the Winnipeg meeting was truly excellent, and I would like to thank the Scientific Directors **Don Dawson** (Carleton) and **Fereidoun Ghahramani** (Manitoba), as well as the chair of the local arrangements committee **Abba Gumel** (Manitoba) for arranging such a memorable gathering. It was a pleasure to work with MITACS in organizing this joint meeting, and I'm grateful to **Arvind Gupta** (MITACS Scientific Director), **Jo-Anne Rockwood** (MITACS event coordinator), our own **Gertrud Jeewanjee** (CMS Meetings Coordinator), and all the other

CMS and MITACS staff for their help in making the meeting possible. The program brought together a fascinating and eclectic mixture of mathematicians, scientists, and practitioners, and featured an outstanding level of student participation. I am grateful to the meeting sponsors: the University of Manitoba, Simon Fraser University, CRM, Fields, PIMS, and the Institute for Quantum Computing. Plenary talks were given by **John Baldwin** (Illinois at Chicago), **Kristin Bennett** (Rensselaer Polytechnic Institute), **Richard Cleve** (Waterloo), **Richard Kenyon** (UBC), **Charles Read** (Leeds), **Arnold Rosenberg** (Massachusetts at Amherst), and **Dror Varolin** (Stony Brook). CMS prize lectures were delivered by **Brian Forrest** (Waterloo), who won the CMS Excellence in Teaching Award; **Nassif Ghoussoub** (UBC), who won the Jeffery-Williams Prize; and **Pauline van den Driessche** (Victoria), who won the Krieger-Nelson Prize. There were 454 registered participants and nineteen sessions for invited papers, as well as sessions for contributed papers, posters, and other activities.

The Winnipeg meeting will be a hard act to follow, but the organizers of the upcoming **CMS Winter meeting** (to be held December 8-10, 2007 in London, Ontario and hosted by the University of Western Ontario) are hard at work trying to do just that. I hope to see you there.

## DU BUREAU DU PRÉSIDENT

par Tom Salisbury  
Université York, Toronto

Graham Wright est directeur administratif de la SMC depuis 1979. Au cours de cette période, il a servi la Société avec dynamisme, compétence et dévouement. Une grande partie du mérite pour la croissance fulgurante et la transformation de la SMC durant ces années lui revient. Graham prévoit quitter son poste le 1<sup>er</sup> janvier 2009, à sa 30<sup>e</sup> année de loyaux services. Ses réalisations remarquables ont été soulignées récemment lors du congrès tenu conjointement par la SMC et le Réseau MITACS à l'Université du Manitoba, du 31 mai au 3 juin 2007. À la réunion du conseil d'administration de la SMC, on a annoncé que Graham recevrait le Prix de la SMC pour service méritoire 2007. Toutefois, comme ce prix ne rend pas tout à fait hommage à sa contribution exceptionnelle, le conseil a aussi décidé, par résolution unanime, de renommer le prix 2008, ainsi que tous les prix suivants, le **prix Graham-Wright pour service méritoire**. Le conseil et le personnel de la SMC ont réussi, par on ne sait quel tour de force, à tenir ces décisions secrètes jusqu'à leur annonce durant la réunion. Comme l'a ensuite raconté Graham durant son discours à l'occasion du banquet, cette annonce a donné lieu à une situation que son personnel ne se souvient pas avoir jamais vécu : Graham en est resté bouche bée!

Le banquet était aussi une occasion de remercier l'Université du Manitoba non seulement d'accueillir la Réunion, mais aussi de son soutien continu envers la SMC, notamment par l'hébergement du **Bureau des publications de la SMC**. Grâce au travail de ce bureau, et à celui de ses dirigeants, Michael Doob et Craig Platt, la SMC demeure à la fine pointe de la publication scientifique en langage TeX. Durant le banquet, le doyen de la Faculté des sciences de l'Université du Manitoba Mark Whitmore et moi avons annoncé la création de la **Bourse d'études supérieures SMC-Manitoba**, qui souligne la contribution de l'Université à la mission de la SMC.

Le conseil a également remercié Nassif Ghoussoub et la Station de recherche internationale de Banff (SRIB) d'avoir accueilli l'équipe mexicaine qui a participé à l'Olympiade internationale de mathématiques (OIM) 2007. L'équipe a séjourné à Banff en juillet pour prendre part au camp d'entraînement de l'**équipe canadienne**, organisé par Bill Sands (Calgary). La SMC et la Société mexicaine de mathématiques avaient déjà collaboré dans le cadre de rencontres scientifiques, mais la préparation commune à l'OIM est un nouveau produit de cette collaboration très fructueuse. Nassif et son personnel ont dû réaliser quelques tours de force pour organiser le tout aussi rapidement, et j'aimerais leur témoigner à nouveau toute la reconnaissance de la SMC. Au moment où vous lirez ces lignes, les résultats des deux équipes à l'OIM, qui s'est tenue au Vietnam, seront connus.

Des représentants du Conseil de recherches en sciences naturelles et en génie (CRSNG) ont assisté au congrès de Winnipeg pour commenter les résultats du dernier concours de subventions ainsi que les pressions et changements que subit le CRSNG quant à la structure de son Comité de sélection des subventions. Le CRSNG a donc formé le **Comité de liaison en sciences mathématiques**, dont la présidence est assumée par Jacques Hurtubise (McGill), en lui confiant le mandat d'étudier ces enjeux. Si vous avez quelque commentaire que ce soit à propos du financement des mathématiques par le CRSNG, je vous incite fortement à communiquer avec le représentant de la SMC, soit notre président élu, Tony Lau (Alberta), ou tout autre membre de ce comité, aussi composé des personnes suivantes : Margaret Beattie (Mount Allison), Ed Bierstone (Toronto), Hans Boden (McMaster), Walter Craig (McMaster), Andrew Granville (Montréal), Rachel Kuske (UBC), Bill Langford (Guelph), Gordon Slade (UBC) et Keith Taylor (Dalhousie).

## DU BUREAU DU PRÉSIDENT suite

Mis au fait que notre partenaire de longue date, la **Financière Sun Life**, avait considérablement augmenté son soutien aux divers concours de la SMC, le conseil a également décidé de renommer notre concours communément appelé « le Défi », le Défi ouvert canadien de mathématiques Financière Sun Life. Nous remercions la Sun Life de contribuer au soutien de cet important programme. J'aimerais aussi remercier l'Université de Lethbridge qui vient de créer, à la mémoire de **Jiping (Jim) Liu**, un de ses anciens professeurs aujourd'hui décédé, un fonds de déplacement pour aider les étudiants à se rendre aux Réunions et congrès de la SMC.

Le congrès de Winnipeg a aussi marqué la fin du mandat de nombreux membres de comités. J'aimerais remercier tous les membres sortants du conseil d'administration, en particulier notre président sortant Eddy Campbell (Memorial) et les vice-présidents sortants Jason Brown (Dalhousie), Ram Murty (Queen's), Ed Perkins (UBC) et Bruno Rémillard (HEC) de leur dévouement et des valeureux services qu'ils ont rendus à la SMC. Ce fut un plaisir et un honneur de travailler avec chacun d'entre eux. Ce sera avec plaisir que je travaillerai au cours des prochaines années avec le **nouveau conseil** et le **nouvel exécutif**, notamment avec le président élu Tony Lau et les vice-présidents Michael Bennett (UBC), Gordon MacDonald (UPEI), Catherine Sulem (Toronto) et Yvan Saint-Aubin (Montréal). Un mot d'explication est de mise : vous vous souviendrez sans doute que Rachel Kuske avait été élue vice-présidente pour la région de l'Ouest. Rachel est depuis devenue chef de son département à l'Université de la Colombie-Britannique et conserve la présidence d'un comité de sélection des subventions du CRSNG, ce qui l'empêche de consacrer le temps qu'elle aurait voulu à la SMC. Michael Bennett a gentiment accepté de la remplacer, et sa nomination à la vice-présidence a été adoptée par le conseil d'administration.

Mais revenons aux mathématiques. Le programme scientifique du congrès de Winnipeg était vraiment excellent. J'aimerais

remercier les directeurs scientifiques **Don Dawson** (Carleton) et **Fereidoun Ghahramani** (Manitoba) ainsi que le président du Comité de logistique, **Abba Gumel** (Manitoba), d'avoir organisé cette rencontre mémorable. Ce fut fort agréable de travailler avec le Réseau MITACS à l'organisation de ce congrès conjoint. Je tiens à remercier particulièrement **Arvind Gupta** (MITACS directeur scientifique), **Jo-Anne Rockwood** (coordonnatrice de MITACS), notre chère **Gertrud Jeewanjee** (coordonnatrice des congrès de la SMC), de même que tous les autres membres du personnel de la SMC et du Réseau MITACS d'avoir collaboré à la réalisation de ce congrès. Le programme a mis en vedette un mélange fascinant et éclectique de mathématiciens, de scientifiques et de praticiens, et a attiré un nombre exceptionnel d'étudiants. Un grand merci aussi aux commanditaires du congrès : l'Université du Manitoba, l'Université Simon Fraser, le CRM, l'Institut Fields, l'Institut du Pacifique et l'Institut du calcul quantique. **John Baldwin** (Illinois à Chicago), **Kristin Bennett** (Rensselaer Polytechnic Institute), **Richard Cleve** (Waterloo), **Richard Kenyon** (UBC), **Charles Read** (Leeds), **Arnold Rosenberg** (Massachusetts à Amherst) et **Dror Varolin** (Stony Brook) ont prononcé les conférences plénières, et les conférences de lauréats de la SMC ont été données par **Brian Forrest** (Waterloo), Prix d'excellence en enseignement de la SMC; **Nassif Ghoussoub** (UBC), prix Jeffery-Williams, et **Pauline van den Driessche** (Victoria), prix Krieger-Nelson. Quelque 454 personnes se sont inscrites au congrès, dont le programme proposait 19 conférenciers, des sessions de communications libres et de présentations par affiche et plusieurs autres activités.

Le congrès de Winnipeg met la barre haute pour nos prochaines rencontres, mais les comités organisateurs de la prochaine **Réunion d'hiver de la SMC** (du 8 au 10 décembre 2007 à London, à l'Université Western Ontario) travaillent avec acharnement pour livrer un produit de qualité tout aussi exceptionnelle. Au plaisir de vous y voir!

### CALL FOR NOMINATIONS 2007 David Borwein Distinguished Career Award

The David Borwein Distinguished career award recognizes mathematicians who have made exceptional, broad, and continued contribution to Canadian mathematics.

A complete nomination dossier consists of:

- A signed nomination statement from a present or past colleague, or collaborator (no more than three pages) having direct knowledge of the nominee's contribution;
- a short curriculum vitae, no than five pages;
- Two to four letters of support in addition to the nomination;
- Other supporting material may be submitted, no more than 10 pages.

A nomination can be updated and will remain active for three years. Six copies of the complete nomination dossier must arrive at the CMS Executive Office no later than **November 15, 2007**.

### APPEL DE MISES EN CANDIDATURE Prix David-Borwein de mathématicien émérite pour l'ensemble d'une carrière 2007

Le prix David-Borwein de mathématicien émérite pour l'ensemble d'une carrière rend hommage à un mathématicien qui a fait une contribution exceptionnelle et soutenue aux mathématiques canadiennes.

Le dossier de candidature comprendra les éléments suivants :

- une lettre de mise en candidature signée par un collègue ou un collaborateur actuel ou des années passées (trois pages maximum) qui connaît très bien les réalisations de la personne proposée;
- un bref curriculum vitae, maximum de cinq pages;
- de deux à quatre lettres d'appui, en plus de la mise en candidature;
- tout autre document pertinent, maximum de 10 pages.

Toute mise en candidature est modifiable et demeurera active pendant trois ans. Le dossier complet, en six exemplaires, doit parvenir au bureau administratif de SMC au plus tard le **15 novembre 2007**.

Selection Committee / Comité de sélection  
David Borwein Distinguished Career Award / Prix David Borwein pour carrière distinguée  
Canadian Mathematical Society / Société mathématique du Canada  
577 King Edward, Ottawa, Ontario K1N 6N5

## CALL FOR PROPOSALS - 2007 ENDOWMENT GRANTS COMPETITION

The Canadian Mathematical Society is pleased to announce the 2007 Endowment Grants Competition to fund projects that contribute to the broader good of the mathematical community. The Endowment Fund is used to fund such projects and the Endowment Grants Committee (EGC) administers the distribution of the grants and adjudicates 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-curricular 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 tends 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.

**Application process.** Application forms and templates as well as advice and directions are available at the CMS website

[www.cms.math.ca/Grants/EGC](http://www.cms.math.ca/Grants/EGC).

Proposals must be received no later than **September 30, 2007**.

The Chair of the Endowment Grants Committee invites emails expressing interest in the grant as soon as possible

**Dr. Karl Dilcher**  
Chair, Endowment Grants Committee  
Canadian Mathematical Society  
577 King Edward  
Ottawa, ON K1N 6N5  
[chair-egc@cms.math.ca](mailto:chair-egc@cms.math.ca)

## APPEL DE PROPOSITIONS - CONCOURS DE BOURSES DU FONDS DE DOTATION 2007

La Société mathématique du Canada (SMC) est heureuse d'annoncer la tenue du Concours de bourses du fond de dotation 2007 pour le financement d'activités qui contribuent à l'essor global de la communauté mathématique. Le Comité d'attribution des bourses du fonds de dotation (CABFD) se charge 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.

De façon générale, le CABFD favorise 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 leur intention envers cette valeur.

**Processus de demande.** Le formulaire de demande et gabarits, ainsi que conseils et instructions sont disponible au site de la SMC

[www.smc.math.ca/Grants/EGC/.f](http://www.smc.math.ca/Grants/EGC/.f).

Les applications doivent être reçues au plus tard le **30 septembre 2007**.

Le président du comité invite les courriels décrivant votre intérêt au fond dès que possible.

**Dr. Karl Dilcher**  
Président, Comité d'attribution des bourses du fonds de dotation  
Société mathématique du Canada  
577 King Edward  
Ottawa, ON K1N 6N5  
[chair-egc@cms.math.ca](mailto:chair-egc@cms.math.ca)

**Hilton Hotel  
London (Ontario) December 8-10  
Host: University of Western Ontario**

## SESSIONS

By invitation of the Meeting Committee, there will be sessions in the following areas. The list of speakers is preliminary, and participants interested in delivering a talk in one of the sessions should contact one of the organizers of that session.

À l'invitation du comité de coordination, des sessions sont prévues dans les domaines ci-dessous. La liste de conférenciers est préliminaire, et l'on demande à toute personne intéressée à présenter une communication dans l'une des sessions de contacter l'un des organisateurs de la session en question.

**Algebraic Combinatorics, Representations and Geometry**  
**Combinatoire algébrique, représentations et géométrie**  
Org: Lex Renner (Western), Benjamin Steinberg (Carleton)

**Algebraic Stacks**  
**Champs algébriques**  
Org: Ajneet Dhillon (Western)

Arend Bayer (Utah), Renzo Cavalieri (Michigan), Mike Fried (California – Irvine), Yufeng Jiang (UBC), Kuimars Kaver (Toronto), Manish Kumar (Purdue), Daniel Krashen (Yale), Behrang Noohi (Florida State), Pramath Sastry (East Carolina), Greg Smith (Queen's), Razvan Veliche (Utah)

**Algorithmic Challenges in Polynomial and Linear Algebra**  
**Défis algorithmiques dans l'algèbre polynomiale et l'algèbre linéaire**  
Org: Stephen Watt (Western)

**Calculus of Variations in Physics, Geometry and Economics**  
**Calcul des variations, géométrie et économie**  
Org: Robert McCann (Toronto), Benjamin Stephens (Toronto)

**Combinatorics and its Applications to Mathematical Physics**  
**Combinatoires et ses applications en physique mathématique**  
Org: Michael Gekhtman (Notre Dame), Michael Shapiro (Michigan State)

Renzo Cavalieri (Michigan), Leonid Chekhov, tentative (Steklov Mathematical Institute, Moscow), Shaun Fallat (Regina), Sergei Fomin (Michigan), Ian Goulden (Waterloo), David Jackson (Waterloo), Bruce Sagan (Michigan State), John Stembridge (Michigan), Pavel Tumarkin, tentative (Moscow Independent University), Ravi Vakil (Stanford)

**Complex Analytic Geometry**  
**Géométrie analytique complexe**  
Org: Tatyana Foth (Western), Finnur Larusson (Adelaide), Rasul Shafikov (Western)

**Error Control Codes, Information Theory and Applied Cryptography**  
**Codes de contrôle d'erreurs, théorie de l'information et cryptographie appliquée**

Org: Aiden Bruen (Calgary), David Wehlau (Queen's and RMC)

**Graph Theory**  
**Théorie des graphes**  
Org: Sebastian Cioaba (UC-San Diego), Stephen Kirkland (Regina), Claude Tardif (RMC)

**History and Philosophy of Mathematics**  
**Histoire et philosophie des mathématiques**  
Org: Tom Archibald (SFU), Deborah Kent (Hillsdale College)

Tom Archibald (SFU), John Bell (Western), James Brown (Toronto), David Bellhouse (Western), Robert Dawson (St. Mary's), Alexander Jones (Toronto), Deborah Kent (Hillsdale College, Michigan), Glen van Brummelen (Quest University)

**Homotopy Theory**  
**Théorie de l'homotopie**  
Org: Kristine Bauer (Calgary)

**Iwasawa Theory**  
**Théorie d'Iwasawa**  
Org: Manfred Kolster, Romyar Sharifi (McMaster)

Kazim Buyukboduk (Stanford), Ben Howard (Boston College), Hershy Kisilevski (Concordia), Kumar Murty (Toronto), Al Weiss (Alberta), Bei Zhang (Columbia)

**Mathematical Applications of Category Theory**  
**Applications mathématiques de la théorie des catégories**  
Org: F. William Lawvere (SUNY-Buffalo), Walter Tholen (York)

Bernard Badzioch (Buffalo), Michael Barr (McGill), John Bell (Western), Marta Bunge (McGill), Jonathon Funk (West Indies), Gabor Lukacs (Manitoba), Ernie Manes (Massachusetts), Philip Mulry (Colgate University), Susan Niefield (Union College), Robert Pare (Dalhousie), Dorette Pronk (Dalhousie), Bob Rosebrugh (Mount Allison), Myles Tierney (UQAM), Richard Wood (Dalhousie)

**Mathematical Imagination**  
**Imagination mathématique**  
Org: George Gadanidis (Western)

Presenters: Robert Bilinski (Collège Montmorency), Michelle Cordy (Thames Valley District School Board), Stewart Craven (Toronto District School Board), William Higginson (Queen's), John Kezys (Mohawk College), Donna Kotsopoulos (Wilfrid Laurier)

Panelists: William Higginson (Queen's), Donna Kotsopoulos (Wilfrid Laurier), Peter Taylor (Queen's), Immaculate Namukasa (Western)

# CMS WINTER 2007 MEETING / RÉUNION D'HIVER 2007 DE LA SMC

Performances: *Calculus: The Musical!* by Sadie Bowman & Mark Guzman, Matheatre; *Math-e-Motion* by Stewart Craven (Toronto District School Board); *Math Imagination Musical Performance* by George Gadanidis (Western), Daryn Bee (Western), Jenna Bee and friends.

## Mathematics of Finance

### Finance mathématique

Org: Matt Davison (Western), Rogemar Mamon (Western), Mark Reesor (Western)

Alex Badescu (Calgary), Dave Bolder (Bank of Canada), Abel Cadenillas (Alberta), Joe Campolieti (Wilfred Laurier), Matt Davison (Western), Keldon Drudge (Prism Valuation; Waterloo), Matheus Grasselli (McMaster), Jeremy Graveline (Minnesota), Tom Hurd (McMaster), Cody Hyndman (Concordia), Sebastian Jaimungal (Toronto), Madhu Kalimipalli (Wilfred Laurier), Rogemar Mamon (Western), Mark Reesor (Western), Dave Saunders (Waterloo), Luis Seco (Toronto), Anatoliy Swishchuk (Calgary), Matt Thompson (Queen's), Xikui Wang (Manitoba), Ken Vetzal (Waterloo), Tony Ware (Calgary)

## Non-Commutative Geometry

### Géométrie non commutative

Org: Masoud Khalkhali (Western)

## Nonlinear Wave Equations and Applications

### Équations d'ondes non linéaires et leurs applications

Org: Walter Craig (McMaster), Catherine Sulem (Toronto)

## Quantum Information Theory in Quantum Gravity

### Théorie de l'information quantique en gravité quantique

Org: David Kribs (Guelph), Fotini Markopoulou (Perimeter Institute)

## Contributed Papers

### Communications libres

Org: Tatyana Foth (Western)

## EMPLOYMENT OPPORTUNITY

### *The Brookfield Research Instructorship*

The Department of Pure Mathematics at the University of Waterloo is proud to announce the inaugural competition for the *Brookfield Research Instructorship*. This prestigious academic position is made possible through the visionary, ongoing support of Mr. J. Frank Brookfield of Waterloo, Ontario. This international competition is aimed at outstanding new mathematicians. The *Brookfield Research Instructorship* will have a duration of two years, renewable for a third year subject to mutual agreement between the candidate and the Department.

The goal of the Instructorship is to enhance research intensity in Pure Mathematics at Waterloo, to provide an opportunity for young researchers to diversify and intensify their research capacity, and to interact with students as teachers and mentors. The *Brookfield Research Instructor* will be someone who can demonstrate leadership and bring fresh ideas to our research enterprise through collaborations with departmental colleagues as well as teaching of graduate and undergraduate courses. The Department will seek to appoint a candidate who is expert in one of the areas of departmental activity: functional analysis, geometry and topology, algebra and logic, or number theory.

The first *Brookfield Research Instructor* will be appointed on July 1, 2008. The fellowship salary will be at least \$50,000 per year, and comes with a \$5,000 annual research grant. In addition to doing research, the Brookfield Research Instructor will be expected to teach five semester-long course (12 weeks) over a three year period.

The closing date for the competition is **December 15, 2007**. Interested candidates should apply to the address below by submitting their curriculum vitae plus a description of research interests and accomplishments, as well as ensure that at least three letters of reference are sent directly to this address.

#### **Professor Frank Zoritzto**

Chair, Department of Pure Mathematics  
University of Waterloo  
Waterloo, Ontario  
CANADA, N2L 3G1  
e-mail: fazorxit@uwaterloo.ca

We appreciate all replies to this advertisement, but only highly ranked individuals will be contacted. Waterloo is committed to employment equity and encourages applications from all qualified candidates, including aboriginal peoples, persons with disabilities, and members of visible minorities.

**Hilton Hotel  
London (Ontario) December 8-10  
Host: University of Western Ontario**

On behalf of the University of Western Ontario, the Department of Mathematics invites the mathematical community to the CMS Winter 2007 Meeting. The program will include plenary and prize lectures, and a wide variety of sessions, including a contributed paper session.

All activities and scientific talks will be held at the Hilton Hotel and the Delta Armories Hotel.

For the most up-to-date information concerning the program, detailed schedules, registration forms and abstract submission forms, please visit the meeting website at [www.cms.math.ca/Events/](http://www.cms.math.ca/Events/).

## Prizes and Awards

**Coxeter-James Prize**

Vinayak Vastal (University of British Columbia)

**Doctoral Prize**

Lap Chi Lau (Chinese University of Hong Kong)

**Adrien Pouliot Prize**

Richard Nowakowski (Dalhousie University)

**G. de B. Robinson Award**

to be announced

## Plenary Speakers

Erich Kaltofen (North Carolina State)

Mikhail Kapranov (Yale)

Blaine Lawson (SUNY/Stony Brook)

Seth Lloyd (MIT)

Otmar Venjakob (Heidelberg)

Marcelo de Carvalho Borba (Sao Paulo at Rio Claro)

## Business Meetings

**Executive Committee Meeting:** Thursday, December 6, Hilton, Windsor Club Room

**Development Group Luncheon:** Friday, December 7, Hilton, Windsor Club Room

**Board of Directors Meeting:** Friday, December 7, Hilton, Victoria Room

## Social Events

**Welcoming Reception:** Friday, December 7, Hilton, Ballroom

**Student Social:** TBD

**Banquet:** Sunday, December 9, Hilton, Ballroom

Complimentary coffee and juice will be available during the scheduled breaks.

## Exhibits

Exhibits will be open from 9:30 am to 4:00 pm on Saturday and Sunday in the Ballroom Foyer of the Hilton Hotel.

The Joint Exhibit features books and other products from publishers and other companies and organizations not represented at the meeting. Order forms will be available at the exhibit for your convenience. We will forward any orders to the corresponding company after the meeting. Books and other materials that will be displayed at this Joint Exhibit will be donated to the host university.

We invite participants to visit the CMS Membership Booth and Book Display, located in the registration area. A representative will be available from 9:30 am to 4:00 pm to answer questions about membership, publications, and other programs.

## Submission of Abstracts

For abstracts of talks to be published on-line and in the meeting programme, they have to be submitted by October 15, 2007, using the on-line form at [cms.math.ca/forms/abs-w07](http://cms.math.ca/forms/abs-w07). The organizers appreciate the cooperation of all speakers in observing this important deadline.

## Registration

The registration form is available at [www.cms.math.ca/Events](http://www.cms.math.ca/Events)

Registration fees are given in Canadian dollars. Payment may be made by cheque (Canadian or US dollars), or by VISA or MasterCard. To qualify for the reduced rate, payment must be received by October 18; for the registration to be processed before the meeting, payment must be received by November 18. Receipts will be provided at the meeting.

	ONLINE		ONSITE
	Early rate until Oct 18	Regular rate Oct 19 - Nov 18	
Prize Lecturer (incl. 2 free banquet tickets)	\$ 0	\$ 0	\$ 0
Plenary, Public Lecturer (incl. 1 free banquet ticket)	\$ 0	\$ 0	\$ 0
Students	\$95	\$125	\$150
Postdoc, Retired, K-12 Teachers, Unemployed	\$125	\$150	\$175
CMS members, Organizers, Speakers	\$245	\$295	\$345
Non-Members	\$395	\$445	\$495
One-day fee (onsite only)	-	-	\$175
Banquet ticket	\$ 60.00	\$ 60.00	\$ 60.00

## Advantages to Pre-Registration:

- reduced fees for early registration until October 18
- your name appears on the list of participants on the meeting web site
- your Meeting Package is waiting for you at the reception on Friday evening
- no waiting in line early Saturday morning to process your registration!
- banquet tickets are available now but may no longer be available on site

## Refund Policy

Participants wishing to cancel their registration must notify the CMS ([meetings@cms.math.ca](mailto:meetings@cms.math.ca)) in writing by November 18

# CMS WINTER 2007 MEETING / RÉUNION D'HIVER 2007 DE LA SMC

to receive a refund less a \$40 processing fee. Those whose contributed paper has not been accepted will upon request be fully refunded.

## Accommodation

The hotels listed below are offering rooms at a reduced group rate during the conference as well as 2 days prior and 2 days after the conference. To be eligible for the reduced room rates, participants must make their reservations before the date indicated, quoting the group code. Reservations made after the deadline will be on a space available basis and the group rate may no longer apply.

Rates are per room per night and are quoted in Canadian dollars. Reservations must be guaranteed by a one-night deposit or a major credit card. It is recommended to clarify payment and cancellation policies when making the reservation, as these vary from hotel to hotel.

### Hilton Hotel

([www.londonontario.hilton.com](http://www.londonontario.hilton.com))

**Booking deadline:** November 5, 2007

**Group code:** Canadian Mathematical Society

300 King Street, London, Ontario, N6B1S2

Phone: 519-439-1661 or 1-800-445-8667

Fax: 519-439-9672

Hotel provides a 100% smoke-free environment

Wireless internet is complimentary

#### Rates

Standard Room (two double beds or one king size bed): \$119

Business Class King, Executive Suite or Prime Minister Suite:

\$159

Quadruple occupancy, maximum of 4 persons per room

No pets are allowed in the guest rooms

Applicable taxes: 6% GST (refundable to non-residents of Canada), 5% Provincial Sales Tax

**Children:** Children under 18 may stay for free in their parent's room. Child care can be arranged through the front desk.

**Parking:** \$12 per day self-parking, \$20 per day Valet-parking

**Check-in:** 3:00 PM

**Check-out:** 12:00 PM

### Delta London Armouries

([www.deltahotels.com](http://www.deltahotels.com))

<http://www4.deltahotels.com/hotels/hotelinfo.html?categoryId=4&hotelId=12>

This hotel is located right next to the Hilton Hotel.

**Booking deadline:** November 7, 2007

**Group code:** Canadian Mathematical Society

325 Dundas Street, London, Ontario, N6B 1T9

Phone: 1-800-268-1133, 1-800-668-9999, 519-679-6111

Fax: 519-679-3957

Hotel provides a 100% smoke-free environment

Wired internet is complimentary; wireless is available in common areas.

#### Rates:

Standard Delta Room: \$109

Applicable taxes: 6% GST (refundable to non-residents of Canada), 6% Provincial Sales Tax

**Children:** Children under 18 stay for free in their parent's room.

**Parking:** \$12 for valet, \$7.50 for self parking

**Check-in:** 3:00 pm

**Check-out:** 12:00 pm

#### Child Care

The Hilton and Delta Armouries Hotels do not offer in-house child care; the Front Desk or the Concierge will assist in finding child care providers nearby. Advance research and arrangements are recommended.

#### Travel

A taxi fare from the airport to downtown costs approximately \$16

Detailed information regarding the University of Western Ontario, the city of London, and the province of Ontario including tourism information, local weather and climate, site and street maps, and itineraries for self-guided tours, are available at the following websites:

- University of Western Ontario ([www.math.uwo.ca](http://www.math.uwo.ca))
- Tourism London ([www.londontourism.ca](http://www.londontourism.ca))
- Ontario Travel ([www.ontariotravel.net](http://www.ontariotravel.net))
- Canada Weather Forecast ([www.weatheroffice.ec.gc.ca](http://www.weatheroffice.ec.gc.ca))

#### Graduate Student Travel Support

Limited funds are available to partially fund the travel and accommodation costs for bona fide graduate students at a Canadian or other university. Preference is given to Canadian students. To apply for this funding, applicants should submit a letter written by their supervisor or departmental graduate advisor, providing the following: name of student, area of study and level, how the student will benefit from the meeting, whether or not the student be speaking, and what support is available from other sources.

This letter should be sent before October 15, 2007 to [gradtravel-w07@cms.math.ca](mailto:gradtravel-w07@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 after the meeting and upon completion and submission of the standard Travel Expense Claim Form, along with appropriate original receipts.

For more information, please contact the Meeting Committee at [gradtravel-w07@cms.math.ca](mailto:gradtravel-w07@cms.math.ca).

#### Sponsors

Support from the following is gratefully acknowledged.

Additional information regarding support for this meeting will

# CMS WINTER 2007 MEETING / RÉUNION D'HIVER 2007 DE LA SMC

be posted to the meeting web site as it becomes available.

- le Centre de Recherches Mathématiques
- The Fields Institute
- MITACS
- Pacific Institute for the Mathematical Sciences
- University of Western Ontario
  - Department of Mathematics
  - Faculty of Education
  - Faculty of Science
  - Research Western
  - Department of Applied Mathematics

*The Canadian Mathematical Society wishes to acknowledge the contributions of the Meeting Committee.*

## Meeting Director

Dr. J.F. Jardine (Western)

## Local Arrangements

Dr. David Riley (Western)

## SCHEDULE / HORAIRE (as of July 16, 2007)

THURSDAY/JEUDI December 6 décembre	SATURDAY/SAMEDI December 8 décembre	SUNDAY/DIMANCHE December 9 décembre	MONDAY/LUNDI December 10 décembre
18:00 – 22:00 Executive Committee Meeting Réunion du Comité exécutif	8:00 – 17:00 <b>Registration/Inscription</b> 9:30 – 16:00 <b>Exhibits/Expositions</b>	8:00 – 17:00 <b>Registration/Inscription</b> 9:30 – 16:00 <b>Exhibits/Expositions</b>	8:00 – 16:00 <b>Registration/Inscription</b>
	8:30 – 9:00 <b>Opening/Ouverture</b>	8:30 – 10:00 <b>Scientific Sessions</b>	8:30 – 10:00 <b>Scientific Sessions</b>
	9:00 – 9:45 <b>M. de Carvalho Borba</b>		
	10:00 – 10:30 Break/Pause		
<b>FRIDAY/VENDREDI</b> December 7 décembre	10:30 – 12:30 <b>Scientific Sessions</b>	10:30 – 11:30 <b>Scientific Sessions</b>	10:30 – 11:30 <b>Scientific Sessions</b>
11:00 AM – 1:00 PM Development Group Luncheon Lunch du groupe de développement		11:30 – 12:15 <b>Plenary Lecture</b> <b>Conférence plénier</b>	11:30 – 12:15 <b>Plenary Lecture</b> <b>Conférence plénier</b>
1:30 – 6:30 Board of Directors Meeting Réunion du conseil d'administration de la SMC		12:30 – 14:00 Lunch Break	
	14:00 – 14:45 <b>Prize Lecture</b>	14:00 – 14:45 <b>Prize Lecture</b>	14:00 – 14:45 <b>Plenary Lecture</b> <b>Conférence plénier</b>
	15:00 – 15:45 <b>Seth Lloyd</b>	15:00 – 15:45 <b>Plenary Lecture</b> <b>Conférence plénier</b>	15:00 – 15:45 <b>Plenary Lecture</b> <b>Conférence plénier</b>
	15:45 – 16:00 Break/Pause		
	16:00 – 17:30 <b>Scientific Sessions</b>	16:00 – 17:30 <b>Scientific Sessions</b>	16:00 – 17:30 <b>Scientific Sessions</b>
	17:30 – 18:30 <b>Richard Nowakowski</b>		
7:00 – 9:00 <b>Welcome Reception</b> <b>Réception d'accueil</b>		18:00 – 19:00 <b>Reception (cash bar)</b> <b>Réception (bar payant)</b>	
		19:00 – 22:00 <b>Banquet</b>	

For the latest schedule details please visit the web site: [www.cms.math.ca/events](http://www.cms.math.ca/events)

La version la plus récente du programme est en ligne au [www.cms.math.ca/reunions](http://www.cms.math.ca/reunions)

**Hôtel Hilton  
London (Ontario) 8-10 décembre  
Hôte : University of Western Ontario**

*Au nom de l'Université Western Ontario, le Département de mathématiques invite la communauté mathématique à la Réunion d'hiver 2007 de la Société mathématique du Canada (SMC). Au programme : des conférenciers pléniers et des conférences de lauréats, ainsi qu'une grande diversité de sessions, y compris une session de communications libres.*

*Toutes les activités, y compris celles du programme scientifique, se dérouleront à l'hôtel Hilton et au Delta Armories.*

*Vous trouverez l'information la plus récente sur les programmes, y compris les horaires détaillés, les formulaires d'inscription et les formulaires électroniques pour l'envoi des résumés au [www.smc.math.ca/Events/f](http://www.smc.math.ca/Events/f).*

## Prix

**Prix Coxeter-James**

Vinayak Vastal (Université de la Colombie-Britannique)

**Prix de doctorat**

Lap Chi Lau (Université chinoise de Hong Kong)

**Prix Adrien-Pouliot**

Richard Nowakowski (Dalhousie University)

**Prix G. de B. Robinson**

à venir

## Conférenciers pléniers

Erich Kaltofen (North Carolina State)

Mikhail Kapranov (Yale)

Blaine Lawson (SUNY/Stony Brook)

Seth Lloyd (MIT)

Otmar Venjakob (Heidelberg)

Marcelo de Carvalho Borba (Sao Paulo à Rio Claro)

## Séances de travail

**Réunion du Comité exécutif** : le jeudi 6 décembre, Hilton, salle Windsor Club

**Lunch du Groupe de développement** : le vendredi 7 décembre, Hilton, salle Windsor Club

**Réunion du Conseil d'administration** : le vendredi 7 décembre, Hilton, salle Victoria

## Activités sociales

**Réception d'accueil** : le vendredi 7 décembre, Hilton, salle de bal

Activité sociale des étudiants : à déterminer

**Banquet** : le dimanche 9 décembre, Hilton, salle de bal

Du café et des jus seront servis durant les pauses prévues à l'horaire.

## Salon des exposants

Le salon des exposants sera ouvert de 9 h 30 à 16 h les samedi et dimanche dans le foyer de la salle de bal du Hilton.

Exposition conjointe : On y présentera des produits de maisons d'édition et d'autres entreprises et organismes

non représentés à la Réunion. On trouvera des bons de commande sur place, qui seront transmis aux entreprises concernées après la Réunion. Les livres et autres produits qui seront présentés à cette exposition seront offerts à l'université hôte.

Nous vous invitons à visiter le comptoir d'adhésion et l'exposition de livres de la SMC dans l'aire d'inscription. Un représentant sera sur place de 9 h 30 à 16 h pour fournir des renseignements sur l'adhésion, les publications et les autres activités de la Société.

## Envoi de résumés

Pour pouvoir publier votre résumé en ligne et dans le programme de la Réunion, nous devons le recevoir au plus tard le 15 octobre 2007. Veuillez utiliser le formulaire électronique au [smc.math.ca/forms/abs-w07](http://smc.math.ca/forms/abs-w07). Les organisateurs remercient les conférenciers de bien vouloir respecter cette importante échéance.

## Inscription

Vous pouvez vous procurer le formulaire d'inscription au [www.smc.math.ca/Events/f](http://www.smc.math.ca/Events/f)

Les tarifs sont indiqués en dollars canadiens dans le tableau. Nous acceptons les paiements par chèque (dollars CAN ou US), VISA ou MasterCard. Le paiement doit nous parvenir au plus tard le 18 octobre pour que vous ayez droit aux tarifs réduits, et au plus tard le 18 novembre pour que nous ayons le temps de traiter votre paiement avant le congrès. Les reçus seront remis sur place.

	<b>EN LIGNE</b>		<b>SUR PLACE</b>
	Inscr. hâtives jusqu'au 18 oct.	Tarif normal 19 oct - 18 nov	
<b>Conférencier primé (2 billets pour le banquet)</b>	<b>0 \$</b>	<b>0 \$</b>	<b>0 \$</b>
<b>Conférencier princ./pop. (1 billet pour le banquet)</b>	<b>0 \$</b>	<b>0 \$</b>	<b>0 \$</b>
<b>Étudiants</b>	<b>95 \$</b>	<b>125 \$</b>	<b>150 \$</b>
<b>Étudiants postdoctoraux, retraités, enseignants (mat., prim., sec.), sans emploi</b>	<b>125 \$</b>	<b>150 \$</b>	<b>175 \$</b>
<b>Membres, organisateurs et conférenciers de la SMC</b>	<b>245 \$</b>	<b>295 \$</b>	<b>345 \$</b>
<b>Non-membres</b>	<b>395 \$</b>	<b>445 \$</b>	<b>495 \$</b>
<b>Tarif quotidien (sur place seulement)</b>	-	-	<b>175 \$</b>
<b>Billet pour le banquet</b>	<b>60 \$</b>	<b>60 \$</b>	<b>60 \$</b>

## Avantages de la préinscription :

- Tarifs réduits pour les personnes qui s'inscrivent au plus tard le 18 octobre
- Votre nom figurera dans la liste des participants sur le site du congrès
- Votre trousse d'inscription sera déjà prête à votre arrivée le vendredi soir
- Vous n'aurez pas besoin de faire la file pour vous inscrire à la première heure samedi matin!
- Les billets pour le banquet sont en vente maintenant, mais il pourrait ne plus en rester sur place

## Politique de remboursement

Les participants qui désirent annuler leur inscription doivent en aviser le bureau administratif de la SMC ([reunion@smc.ca](mailto:reunion@smc.ca)).

# CMS WINTER 2007 MEETING / RÉUNION D'HIVER 2007 DE LA SMC

math.ca) par écrit au plus tard le 18 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

Les hôtels ci-dessous offrent des chambres à un tarif de groupe préférentiel pour la durée du congrès ainsi que pour les deux jours qui précèdent et qui suivent l'événement. Pour y avoir droit, vous devez réserver avant les dates limites indiquées en mentionnant le code de groupe. Les réservations faites après la date limite ne seront acceptées que s'il reste des chambres, et il se pourrait que le tarif préférentiel ne soit plus en vigueur.

Les tarifs sont par nuit, par personne, et sont indiqués en devises canadiennes. Toute réservation doit être garantie par le paiement d'une nuit ou par une carte de crédit reconnue. Nous vous recommandons de vérifier les modalités de paiement et d'annulation au moment de faire votre réservation, car celles-ci varient d'un établissement à l'autre.

### Hôtel Hilton

([www.londonontario.hilton.com](http://www.londonontario.hilton.com))

**Date limite :** 5 novembre 2007

**Code de groupe :** Société mathématique du Canada

300 King Street, London, Ontario, N6B1S2

Téléphone : 519-439-1661 ou 1-800-445-8667

Fax : 519-439-9672

Hôtel entièrement non fumeur

Accès internet sans fil gratuit

#### Tarifs

Chambre standard (deux lits doubles ou un très grand lit) : 119 \$

Très grand lit classe affaires, suite Executive ou suite Prime Minister : 159 \$

Occupation quadruple, maximum de 4 personnes par chambre

Aucun animal permis dans les chambres

Taxes : 6 % de TPS (remboursement accordé aux visiteurs de l'étranger), 5 % de taxe de vente provinciale

**Enfants :** Gratuit pour les enfants de moins de 18 ans qui occupent la même chambre que leurs parents. Le personnel de la réception pourra vous aider à trouver un gardien ou une gardienne.

Stationnement : 12 \$ par jour, stationnement, 20 \$ par jour pour le service voiturier

**Arrivée :** 15 h

**Départ :** 12 h

### Delta London Armouries

([www.deltahotels.com](http://www.deltahotels.com))

<http://www.deltahotels.com/hotels/hotelinfo.html?categoryId=4&hotelId=12>

Cet hôtel est juste à côté du Hilton.

**Date limite :** 7 novembre 2007

**Code de groupe :** Société mathématique du Canada

325 Dundas Street, London, Ontario, N6B 1T9

Téléphone : 1-800-268-1133, 1-800-668-9999, 519-679-6111

Fax : 519-679-3957

Hôtel entièrement non fumeur

Accès internet gratuit; le service sans fil est offert dans les

zones communes.

#### Tarifs :

Chambre standard Delta : 109 \$

Taxes : 6 % de TPS (remboursement accordé aux visiteurs de l'étranger), 6 % de taxe de vente provinciale

Enfants : Gratuit pour les enfants de moins de 18 ans qui occupent la même chambre que leurs parents.

Stationnement : 12 \$ pour le service voiturier, 7,50 \$ pour le service ordinaire

**Arrivée :** 15 h

**Départ :** 12 h

## Services de garde

Les hôtels Delta et Delta Armories n'offrent pas de service de garde sur place; le personnel de la réception ou le concierge pourront vous aider à trouver un gardien ou une gardienne des environs. Nous vous recommandons de faire vos démarches et vos réservations à l'avance.

## Déplacements

Le trajet en taxi de l'aéroport au centre-ville coûte autour de 16 \$

Vous trouverez des renseignements détaillés concernant l'Université de Waterloo, la ville de London et la province de l'Ontario (renseignements touristiques, température et climat locaux, cartes de la ville et des attractions touristiques, circuits touristiques piétonniers, etc.) sur les sites web suivants :

- University of Western Ontario ([www.math.uwo.ca](http://www.math.uwo.ca))
- Tourism London ([www.londontourism.ca](http://www.londontourism.ca))
- Ontario Travel ([www.ontariotravel.net](http://www.ontariotravel.net))
- Service météorologique du Canada ([www.weatheroffice.ec.gc.ca](http://www.weatheroffice.ec.gc.ca))

## Déplacements pour étudiants diplômés

Les étudiants diplômés du Canada ou de l'étranger ont accès à un fonds limité pour financer une partie de leurs frais de déplacement et de séjour. La préférence est toutefois accordée aux étudiants canadiens. 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.

La lettre doit parvenir à la SMC avant le 15 octobre 2007 ([gradtravel-w07@smc.math.ca](mailto:gradtravel-w07@smc.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 après la Réunion sur présentation du formulaire de remboursement approprié accompagné des reçus originaux.

Pour de plus amples renseignements, veuillez communiquer avec la responsable des Réunions ([gradtravel-w07@cms.math.ca](mailto:gradtravel-w07@cms.math.ca)).

## Commanditaires

Nous remercions les organismes ci-dessous de leur soutien

# CMS WINTER 2007 MEETING / RÉUNION D'HIVER 2007 DE LA SMC

financier. Nous publierons de plus amples renseignements sur le financement du congrès dès qu'ils nous parviendront.

- Centre de recherches mathématiques
- Institut Fields
- MITACS
- Institut du Pacifique pour les sciences mathématiques
- Université Western Ontario
  - Département de mathématiques
  - Faculté d'éducation
  - Faculté des sciences
  - Recherche Western
  - Département de mathématiques appliquées

*La Société mathématique du Canada tient à remercier les membres du Comité de coordination de leur excellent travail.*

## **Directeur de la réunion :**

J.F. Jardine (Western)

## **Président, arrangements locaux (Western)**

Dr. David Riley (Western)

## **Call for Sessions – CMS Winter 2008 Meeting Appel de sessions – Réunion d'hiver 2008 de la SMC**

*Additional self-supported sessions play an important role in the success of our meetings. We welcome and invite proposals for self-supported sessions for this meeting (December 13-15, 2008) in Ottawa, Ontario. Proposals should include a brief description of the focus and purpose of the session, the expected number of the talks, as well as the organizer's name, complete address, telephone number, e-mail address, etc. These additional sessions will be incorporated with the other sessions in time blocks allocated by the Meeting Director. All sessions will be advertised in the CMS Notes, on the web sites 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 on the web site and in the meeting programme. Those wishing to organize a session should send a proposal to the Meeting Director by the deadline below.*

Les sessions complémentaires autonomes jouent un rôle important dans le succès de nos réunions. Nous vous invitons à proposer des sessions autonomes pour ce congrès qui se tiendra à Ottawa, Ontario, du 13 au 15 décembre 2007. Votre proposition doit inclure une brève description de l'orientation et des objectifs de la session, le nombre de communications prévues et leur durée, ainsi que le nom, l'adresse complète, le numéro de téléphone, l'adresse courriel et les autres coordonnées de l'organisateur. Ces sessions complémentaires seront intégrées aux autres sessions du programme, dans des cases horaires prévues à cet effet par le directeur de la Réunion. Toutes les sessions seront annoncées dans les Notes de la SMC, sur le site Web et, si possible, dans le Bulletin de l'AMS et les publications d'autres sociétés. Les conférenciers de ces sessions complémentaires devront présenter un résumé qui sera publié sur le site Web et dans le programme de la Réunion. Toute personne qui souhaiterait organiser une session est priée de faire parvenir une proposition au directeur de la Réunion avant la date limite indiquée ci-dessous.

**Deadline: December 21, 2007**

Date limite : 21 décembre, 2007

## **Meeting Director / Directeur de la Réunion :**

Matthias Neufang

School of Mathematics and Statistics

4364 Herzberg Laboratories

Carleton University

Ottawa, Ontario, K1S 5B6 Canada

Email: mneufang@math.carleton.ca

*The following invited (partially funded) sessions have been confirmed for this conference:*

Les sessions suivantes (partiellement subventionnées) ont été confirmées :

### **Applied Partial Differential Equations**

### **Équations différentielles partielles appliquées**

Org: D. Amundsen, L. Campbell (Carleton), F. Poulin (Waterloo)

### **Dynamics of Large Groups and Semigroups**

### **Dynamique des groupes infini-dimensionnels et des semigroupes**

Org: Alicia Miller (Louisville), Vladimir Pestov (Ottawa)

### **Geometric Group Theory**

### **Théorie Géométrique des Groupes**

Org: Inna Bumagin (Carleton), Benjamin Steinberg (Carleton)

### **Infinite-Dimensional Lie Theory**

### **Théorie infini-dimensionnelle de Lie**

Org: Yuly Billig (Carleton), Alistair Savage (Ottawa)

### **Operator Algebras**

### **Algèbres d'opérateurs**

Org: Benoit Collins (Ottawa), Thierry Giordano (Ottawa)

### **Probability**

### **Probabilité**

Org: Antal Jarai (Carleton), Yiqiang Zhao (Carleton)

## EMPLOYMENT OPPORTUNITIES



Concordia University, Montreal, Quebec, Canada

### Mathematics & Statistics

The Department of Mathematics and Statistics at Concordia University invites applications for one tenure-track position in Mathematics Education to support its Master in the Teaching of Mathematics (M.T.M.) program. Applicants must hold MSc in Mathematics and a PhD in either Mathematics Education or Mathematics, and have a proven record of research in Mathematics Education.

Candidates with knowledge and interests in history and epistemology of Mathematics, technology in Mathematics Education, or learning and teaching at the post-secondary level are especially welcome. The position will involve teaching graduate courses in Mathematics Education, undergraduate courses in Mathematics, and the supervision of theses in Mathematics Education (both at the Master's and PhD levels). A candidate's potential to obtain external research funding in Mathematics Education will be an important criterion in the selection process.

Applications must consist of a cover letter, a current curriculum vitae, copies of recent publications, a statement of teaching philosophy/interests, a statement of research achievements, and evidence of teaching effectiveness. Candidates must also arrange to have three letters of reference sent directly to:

**Dr.Y.P. Chaubey, Chair**  
**Department of Mathematics and Statistic**  
**Concordia University**  
**1455 De Maisonneuve Blvd. West**  
**Montreal, Quebec Canada H3G 1M8**  
**chair@mathstat.concordia.ca**

Subject to budgetary approval, we anticipate filling this position, normally at the rank of Assistant Professor, for July 1, 2008. Appointments at a more senior level may also be considered. Review of applications will begin immediately and will continue until the positions are filled. All applications should reach departments no later than November 1, 2007.

*All qualified candidates are encouraged to apply; however, Canadian citizens and permanent residents of Canada will be given priority. Concordia University is committed to employment equity.*



[www.concordia.ca](http://www.concordia.ca)



FIELDS

### Director, Fields Institute. Call for applications and nominations

The Fields Institute carries on specialized year-long programs, seminars, workshops, short courses, and a broad spectrum of activities across the mathematical sciences. Through these activities it brings together experts, young mathematicians, and graduate students to work on issues of current interest.

The Director is the chief executive officer of the Institute, with responsibility for its scientific leadership and overall operations and budget. The term of office is three to five years, commencing **July 1, 2008** and renewable once.

Candidates should be researchers with strong international stature in the mathematical sciences, and should have proven administrative experience.

For more information visit: [www.fields.utoronto.ca](http://www.fields.utoronto.ca)

Search committee: Mayer Alvo, James Arthur, Thomas Salisbury, Philip Siller (Chair), Mary Thompson, Philippe Tondeur

### Director Search, Fields Institute

222 College Street, Toronto  
Ontario M5T 3J1 Canada

**EARLY BIRD**  **LÉVE TÔT**

REGISTRATION

CMS Winter  
2007 Meeting

Oct. 18<sup>th</sup>, 2007

INSCRIPTION

Réunion d'hiver  
2007 de la SMC

18<sup>er</sup> oct. 2007

In the Operations Fund (General, Education, Research, and Publishing), there was an overall deficit of \$19,732, down from the end-of-year forecast of \$44,391. A significant component of the reduced deficit is due, in large part, to unanticipated donations and lower than projected committee expenses. In addition, there was a \$94,000 charge (\$104,000 had been budgeted) against the Contingency Fund to defray first-year start-up costs for the CMS fund-raising initiative. For 2007, on-going fundraising costs will become part of the operating budget. Numbers of subscription losses were slightly higher than the historical 5% year-to-year reported by most journal publishers but book series sales are beginning to see traction. Although the income from registration fees for the 2006 Summer meeting was significantly lower than projected, subscription and membership revenue was up over 2005, largely due to increased rates.

On balance, the CMS has seemingly stemmed the significant losses incurred in the Operations Fund for 2003 and 2004 with "close to" break-even years in 2005 and 2006. The most significant component of recent deficits has been the impact of Canada-US exchange rates on publishing revenue. Going forward, the CMS fund-raising effort is expected to begin producing more revenue than it costs, thereby pushing our Operations once again into the black. Subsidy reports have been designed which reflect the level of support for all CMS activities and serve as a guide in setting priorities for fund-raising and budgeting.

The Society's Restricted Investments have been separated into Endowed Funds and a Contingency Fund and the newly formed Invested Funds Committee is responsible to the Board of Directors for the Society's restricted investments. An analysis of the costs of lifetime memberships has been completed, and the fee model adjusted. In 2007, the financial statements will reflect the liability associated with lifetime memberships.

Many members have been of assistance to me in a variety of ways this year as I learned the role of Treasurer, but I am especially indebted to Arthur Sherk, Yvette Roberts, Tom Salisbury, and Graham Wright for their contributions to my education.

Le budget de fonctionnement (qui comprend quatre divisions – général, éducation, recherche, publications) affiche un déficit global de 19 732 \$, inférieur à la prévision de fin d'année estimée à 44 391 \$. La réduction de ce déficit est attribuable en grande partie à des dons imprévus et aux dépenses des comités, qui ont été inférieures aux prévisions. En outre, le montant affecté au fonds de prévoyance pour financer la première année des activités de financement de la SMC s'est élevé à 94 000 \$ au lieu des 104 000 \$ prévus. En 2007, les coûts associés aux activités de financement seront intégrés au budget de fonctionnement. Par ailleurs, les pertes d'abonnés ont été légèrement plus élevées que le pourcentage annuel généralement enregistré par les éditeurs de revues, mais les ventes d'ouvrages de nos collections commencent à prendre de l'essor. Même si les revenus tirés des droits d'inscription à la Réunion d'été 2006 ont été plus bas que prévu, les abonnements et les adhésions ont connu une hausse par rapport à 2005, en grande partie en raison de l'augmentation des tarifs et des droits.

La SMC a donc pratiquement enrayer les pertes considérables des budgets de fonctionnement de 2003 et 2004, comme en témoignent ses résultats presque équilibrés en 2005 et en 2006. Ces dernières années, ce sont les effets du taux de change du dollar américain sur les recettes de publication qui ont eu la plus grande incidence sur le déficit. Au cours des prochaines années, on s'attend à ce que les activités de financement de la SMC commencent à rapporter plus qu'elles ne coûtent, ce qui nous permettrait de présenter à nouveau un budget excédentaire. Nous avons conçu des rapports de subvention qui montrent le financement que reçoit chacune des activités de la SMC et qui facilitent l'établissement des priorités budgétaires et de financement.

Le fonds d'investissement affecté de la Société a été divisé en un fonds de dotation et un fonds de prévoyance, dont la gestion est assurée par le nouveau Comité des investissements, qui relève du conseil d'administration. La Société a en outre réalisé une analyse du coût de l'adhésion à vie, qui a donné lieu à un rajustement des droits. En 2007, les états financiers tiendront compte du coût associé à l'adhésion à vie.

De nombreux membres m'ont prêté main-forte de plus d'une façon en cette année de familiarisation avec le rôle de trésorier. J'aimerais toutefois souligner l'appui inestimable à cet apprentissage que m'ont fourni Arthur Sherk, Yvette Roberts, Tom Salisbury et Graham Wright.

## CMS Excellence in Teaching Award for post-secondary undergraduate teaching in Mathematics

## Prix d'excellence en enseignement de la SMC pour l'enseignement collégial et de premier cycle universitaire en mathématiques

Recognizing sustained and distinguished contributions in teaching. Full-time university, college, two-year college, or CEGEP teachers in Canada with at least five years teaching experience at their current institution can be nominated.

For details regarding nomination procedure, please visit

[www.cms.math.ca/prizes](http://www.cms.math.ca/prizes)  
or  
<http://hed.nelson.com>

**Deadline for nomination:  
November 15, 2007**



Ce prix récompense des contributions exceptionnelles et soutenues en enseignement. Il s'adresse aux professeures et professeurs d'université, de collège ou de cégep au Canada ayant au moins cinq ans d'expérience dans leur institution présente.

Pour les détails sur la procédure de mise en nomination voir

[www.cms.math.ca/prizes](http://www.cms.math.ca/prizes)  
ou  
<http://hed.nelson.com>

**Date limite pour soumettre une candidature : 15 novembre 2007**

Thomson Nelson is a  
proud sponsor of this award.

Thomson Nelson est fier  
de commanditer ce prix.

UNIVERSITY OF OTTAWA / UNIVERSITÉ D'OTTAWA  
Department of Mathematics and Statistics  
Département de mathématiques et de statistique

With its strategic location at the heart of Canada's capital, its broad variety of teaching and research initiatives offered in the two official languages, the cosmopolitan environment, and its national perspective, the University of Ottawa is truly Canada's University.

The Department of Mathematics and Statistics of the University of Ottawa invites applications to fill at least one tenure-track position in statistics or biostatistics at the Assistant or Associate professor level starting July 1, 2008. We are seeking a candidate that has a proven track-record in research and teaching at both the undergraduate and graduate level, and will be willing and able to supervise graduate students upon arrival.

Conditions of employment are set by a collective agreement.

Information about the department can be found at

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

Applicants should send a curriculum vitae, a research plan, and arrange for four confidential letters of recommendation, with one addressing teaching, to be sent to **Victor LeBlanc**, Chairman, Department of Mathematics and Statistics, University of Ottawa, Ottawa, ON Canada, K1N 6N5.

Applicants are also encouraged to include copies of up to three of their most significant publications. The closing date for receipt of applications is **November 15, 2007** or until the position is filled.

All qualified candidates are encouraged to apply; however, Canadians and permanent residents will be given priority. Equity is a University of Ottawa policy; women, aboriginal peoples, members of visible minorities and persons with disabilities are encouraged to apply.

The University of Ottawa is justly proud of its 150-year tradition of bilingualism. Through its Second Language Institute, the University provides training to staff members and to their spouses in their second official language. At the time of tenure, professors are expected to have the ability to function in a bilingual setting. In certain cases, professors must have the ability to teach in both official languages to be granted tenure.

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Son emplacement stratégique au coeur de la capitale du pays, la grande variété de ses programmes d'enseignement et de recherche, offerts dans les deux langues officielles du Canada, sa diversité croissante ainsi que sa perspective nationale font de l'Université d'Ottawa l'Université canadienne » par excellence.

Le Département de mathématiques et de statistique de l'Université d'Ottawa met au concours au moins un poste menant à la permanence au rang de professeur adjoint ou de professeur agrégé en statistique ou en biostatistique. Entrée en fonction: le 1er juillet 2008. La personne choisie aura fait ses preuves tant comme chercheur que comme enseignant, et ce à tous les niveaux. En particulier elle pourra diriger des étudiants de deuxième et troisième cycle dès l'entrée en fonction.

Les conditions d'emploi sont déterminées par une convention collective.

Pour plus de renseignements voir

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

Les candidat(e)s doivent faire parvenir leur dossier de candidature au directeur du département, **Victor LeBlanc**, Département de mathématiques et de statistique, Université d'Ottawa, Ottawa ON Canada, K1N 6N5 pour le **15 novembre 2007** et continueront d'être considérés jusqu'à ce que le poste soit comblé. Les dossiers doivent comprendre un curriculum vitae, un plan de recherche et quatre lettres de recommandation confidentielles dont une sur l'enseignement. Nous encourageons les candidat(e)s à joindre à leur dossier jusqu'à trois tirés-à-part de leurs contributions les plus importantes.

On encourage tous les candidats qualifiés à postuler ; la priorité sera toutefois accordée aux Canadiens ainsi qu'aux résidents permanents. L'Université d'Ottawa souscrit à l'équité d'emploi et elle encourage les femmes, les autochtones, les membres des minorités visibles et les personnes handicapées à postuler.

L'Université d'Ottawa est fière, avec raison, de sa tradition de bilinguisme vielle de plus de 150 ans. Par l'entremise de l'Institut des langues secondes, l'Université offre à son personnel et à leurs époux et épouses les moyens de devenir bilingue. Au moment de leur permanence, les professeurs sont tenus de pouvoir fonctionner dans un milieu bilingue. De plus, pour obtenir la permanence, certains professeurs devront pouvoir enseigner dans les deux langues officielles.

## NEWS FROM DEPARTMENTS / NOUVELLES DU DÉPARTEMENT

### L'université de Montréal, Montréal, QC

**Promotions :** Professeurs titulaires : Anne Bourlioux et Robert G. Owens, 1er juin 07; Professeur agrégé : Iosif Polterovich, 1er juin 07.

**Nomination :** Professeur adjoint, Mylène Bédard, juillet 07, statistique.

**Départs à la retraite :** Gert Sabidussi, professeur titulaire, et Martin Goldstein, professeur agrégé, 1er juin 07.

**Lauréats d'un prix ou d'une distinction :** Prix Pierre-Robillard à Mylène Bédard pour la meilleure thèse de doctorat en statistique défendue au Canada en 2006, juin 2007; Prix Lester R. Ford de la Mathematical Association of America à Andrew Granville pour son article de vulgarisation écrit avec Greg Martin intitulé Prime number races (American Mathematical Monthly), août 07.

**Professeurs invités :** Artemiy V. Kiselev, Russie, physique mathématique, avril à sept 07; Dominik Szynal, Pologne, probabilités, 20 juin au 6 juillet 07; Anatoly Klimyk, Ukraine, physique mathématique, printemps 08; Vyacheslav Boyko, Ukraine, physique mathématique, hiver 08; Robert V. Moody, Canada, physique mathématique, automne 07.

**Visiteurs :** Véronique Ladret (probabilités, génétiques mathématiques et statistique, depuis août 05); Miguel Moyers-Gonzalez (analyse numérique et rhéologie, depuis janv. 06); Basak Gurel (topologie, depuis sept 06); Ozgur Ceyhan (topologie, depuis sept 06); Samuel Lisi (topologie, depuis août 05); Fabien Ngo (topologie, depuis sept 06); Jack Fearnley (théorie des nombres, depuis juin 05); Jason Lucier (théorie des nombres, depuis juin 05); Dan Mangoubi (géométrie, depuis sept 06); Igor Wigman (géométrie, depuis sept 06); Julie Rowlett (géométrie, depuis sept 06); Chang Zhong Zhu (analyse, depuis oct 05); Abderrazak Ramadane (mathématiques appliquées, depuis mars 07); Timothy N. Phillips (mathématiques appliquées, oct. 07); Arnaud Chadozeau (théorie des nombres, août 07); Michael Germain (physique mathématique, depuis mai 05); Maryna Nesterenko (physique mathématique, depuis janv. 07); Ruben Sharbaziyan (physique mathématique, depuis juin 06); David Boily (physique mathématique, janv. 08).

### University of Victoria, Victoria, BC

**Visitor:** Junesang Choi (Republic of Korea (South Korea) Analytic Number Theory; Special Functions Jan. 1, 2007-Jan. 31, 2008).

### University of Manitoba, Winnipeg, MB

**Appointments:** Kirill Kopotun (Professor, March 30, 2007 Approximation Theory, Computational and Industrial Mathematics, Numerical Analysis, Linear Algebra (Matrix Theory), Partial Differential Equations).

**Retirements:** W. D. Hoskins (July 1, 2007); R. Grant Woods (July 1, 2007).

**Visitors:** Dr. Yeman Choi (UK, functional analysis, Feb. 2007

- Jan. 2008); Prof E. Timoshenko (Russia, group theory, Feb. - Mar 2007); Prof H. Kharaghani (Canada, Combinatorics, May - June 2007); Dr. E. Samei (Canada, Functional Analysis, June - July 2009); Prof N. Gronbaek (Denmark, Functional Analysis, June 2007); Prof C. Reed (UK, Functional Analysis, June 2007).

### Concordia University, Montreal, Quebec

**Promotions:** Dmitri Korotkin (Full Professor, June 1, 2007); Marco Bertola (tenured Associate Professor, June 1, 2007); Arusharka Sen (tenured Associate Professor, June 1, 2007).

**Appointments:** Wenju Jiang (Assistant Professor, Tenure Track, July 1, 2007 Concordia University, Montreal, Quebec); Lennaert Van Veen (Assistant Professor, Tenure Track, June 1, 2007, Mathematics).

**Retirements:** Richard Hall (Professor, ½ Retirement, January 1, 2007).

### University of North British Columbia Prince George, BC

**Promotions:** Iliya Bluskov (Professor, July 1, 2007); Pranesh Kumar (Professor, July 1, 2007); Sam Walters (Professor, effective July 1, 2007).

**Appointments:** Jennifer Hyndman (Chair of the Mathematics Department, July 1 2007); Wolfram Bentz (Assistant Professor, Universal Algebras, July 1 2007 - April 2008).

**Resignations:** (The Math Dept at UNBC had a recent faculty position buyout: Patrick Montgomery is due to terminate his position with the Department by end of December 2007. This position will be closed without replacement).

### University of Ottawa, Ottawa, ON

**Promotions:** Raluca Balan, (Associate Professor with tenure, May 1, 2007).

**Appointments:** Isabelle Déchène (Assistant Professor, Cryptography, July 1, 2007).

**Awards/Distinctions:** Richard Blute (Faculty of Sciences Professor of the Year, 2007).

### University of Regina, Regina, SK

**Promotions:** Martin Argerami (Associate Professor, July 1 2007).

**Appointments:** Karen Meagher (Assistant Professor, July 1 2007).

**Retirements:** Kathy Heinrich (Professor, June 30, 2007).

**Other News:** Steve Kirkland completed his term as Department Head on June 30, 2007. As of July 1, 2007, the Department Head is Nader Mobar.

# CALENDAR OF EVENTS / CALENDRIER DES ÉVÉNEMENTS

## SEPTEMBER 2007 SEPTEMBRE

- 10-11** Conference in honour of 60<sup>th</sup> birthday of Jean-Yves Girard (Institut Henri Poincaré, Paris, France)  
<http://www-lipn.univ-paris13.fr/jyg60>

- 17-21** "Free Probability, Random Matrices, and Planar Algebras" (Fields Institute workshop)  
[www.fields.utoronto.ca/programs/scientific/07-08/operator\\_algebras/](http://www.fields.utoronto.ca/programs/scientific/07-08/operator_algebras/)

## OCTOBER 2007 OCTOBRE

- 19-20** Southeast Atlantic Regional Conference on Differential Equations (Murray State University, Murray, Kentucky)  
<http://campus.murraystate.edu/searcde/>

- 21-27** The ADONET-CIRM School of Graphs and Algorithms (Grand Hotel Bellavista, Levico Terme, Trento, Italy)  
<http://www.science.unitn.it/cirm/ADONETCIRM07.html>

- 29-Nov 2** "Von Neumann Algebras" (Fields Institute workshop)  
[www.fields.utoronto.ca/programs/scientific/07-08/operator\\_algebras/](http://www.fields.utoronto.ca/programs/scientific/07-08/operator_algebras/)

## NOVEMBER 2007 NOVEMBRE

- 1-5** Joint AARMS-CRM Workshop on Recent Advances in Functional and Delay Differential Equations (Dalhousie University, Halifax, NS)  
<http://www.crm.math.ca/Dynamics2007/>

- 12-16** "Structure of C\*-Algebras", (Fields Institute workshop)  
[www.fields.utoronto.ca/programs/scientific/07-08/operator\\_algebras/](http://www.fields.utoronto.ca/programs/scientific/07-08/operator_algebras/)

- 14-16** Workshop on Dynamical System and Continuum Physics (CRM, University of Montreal, Montreal, Quebec)  
<http://www.crm.math.ca/Dynamics2007/>

## DECEMBER 2007 DÉCEMBRE

- 3-7** International Conference on Topology and its Applications 2007 (Jointly with 4th Japan Mexico Topology Conference) (Kyoto University, Kitashirakawa-Oiwakecho, Sakyoku, Kyoto, Japan)  
<http://www.math.sci.ehime-u.ac.jp/jamex/>

- 7-11** Fourth Pacific Rim Conference (City University of Hong Kong, Kowloon, Hong Kong)  
<http://www6.cityu.edu.hk/rcms/prcm4/>

- 8-10** CMS Winter 2007 Meeting, Host: University of Western Ontario; Hilton Hotel, London, Ontario  
[www.cms.math.ca/events\\_meetings@cms.math.ca](http://www.cms.math.ca/events_meetings@cms.math.ca)

- 11-14** Workshop on Chaos and Ergodicity of Realistic Hamiltonian Systems (CRM, University of Montreal, Montreal, Quebec)  
<http://www.crm.math.ca/Dynamics2007/>

- 11-15** "Operator Spaces and Quantum Groups", (Fields Institute workshop)

[www.fields.utoronto.ca/programs/scientific/07-08/operator\\_algebras/](http://www.fields.utoronto.ca/programs/scientific/07-08/operator_algebras/)

- 12-15** First Joint International Meeting between the AMS and the New Zealand Mathematical Society (NZMS) (Wellington, New Zealand)  
[www.ams.org/amsmtgs/internmtgs.html](http://www.ams.org/amsmtgs/internmtgs.html)

## JANUARY 2008 JANVIER

- 6-9** Joint Mathematics Meetings (San Diego, CA)  
<http://www.ams.org/amsmtgs/national.html>

- 7-11** Workshop on Recent Advances in Operator Theory and Function Theory, (Fields Institute, Toronto, ON)  
[www.fields.utoronto.ca/programs/scientific/07-08/harmonic\\_analysis/](http://www.fields.utoronto.ca/programs/scientific/07-08/harmonic_analysis/)

- 18-19** Young Mathematicians' Conference (CRM, Montreal, QC)  
[activities@crm.umontreal.ca](mailto:activities@crm.umontreal.ca)

- 24-26** Initial Conditions Workshop (CRM, Montreal, QC)  
[activities@crm.umontreal.ca](mailto:activities@crm.umontreal.ca)

## FEBRUARY 2008 FÉVRIER

- 18 - 24** Joint Mathematics Meetings (San Diego, CA)  
<http://www.ams.org/amsmtgs/national.html>

- 18 - 24** Workshop on Harmonic Analysis, (Fields Institute, Toronto, ON)  
[www.fields.utoronto.ca/programs/scientific/07-08/harmonic\\_analysis/](http://www.fields.utoronto.ca/programs/scientific/07-08/harmonic_analysis/)

## MARCH 2008 MARS

- 5-7** The ICMI Centennial Symposium (Accademia dei Lincei, Rome, Italy)  
<http://www.unige.ch/math/EnsMath/Rome2008/>

- 8** The Istituto dell'Encyclopédia Italiana (Accademia dei Lincei, Rome, Italy)  
<http://www.unige.ch/math/EnsMath/Rome2008/>

## APRIL 2008 AVRIL

- 5-13** Clay-Fields Conference on Additive Combinatorics, Number Theory, and Harmonic Analysis  
[www.fields.utoronto.ca/programs/scientific/07-08/harmonic\\_analysis/](http://www.fields.utoronto.ca/programs/scientific/07-08/harmonic_analysis/)

- 7-11** Workshop: Spectrum and Dynamics (CRM, Montreal, QC)  
[activities@crm.umontreal.ca](mailto:activities@crm.umontreal.ca)

## MAY 2008 MAI

- 12-16** Workshop: Singularities, Hamiltonian and Gradient Flows (CRM, Montreal, QC)  
[activities@crm.umontreal.ca](mailto:activities@crm.umontreal.ca)

- 2-6** Second Canada-France Meeting (CRM, Montréal, QC)

See page 14 for more information on the Fields Institute workshops.

## NSERC - CMS Math in Moscow Scholarships

The Natural Sciences and Engineering Research Council (NSERC) and the Canadian Mathematical Society (CMS) support scholarships at \$9,000 each. Canadian students registered in a mathematics or computer science program are eligible.

The scholarships are to attend a semester at the small elite Moscow Independent University.

### Math in Moscow Program

[www.mccme.ru/mathinmoscow/](http://www.mccme.ru/mathinmoscow/)

#### Application details

[www.cms.math.ca/bulletins/Moscow\\_web/](http://www.cms.math.ca/bulletins/Moscow_web/)

For additional information please see your department or call the CMS at 613-562-5702.

Deadline **September 30, 2007** to attend the Winter 2008 semester



## Bourse CMS/CRSNG Math à Moscou

Le Conseil de Recherches en Sciences Naturelles et en Génie du Canada (CRSNG) et la Société mathématique du Canada (SMC) offrent des bourses de 9,000 \$ chacune. Les étudiantes ou étudiants du Canada inscrit(e)s à un programme de mathématiques ou d'informatique sont éligibles.

Les bourses servent à financer un trimestre d'études à la petite université d'élite Moscow Independent University.

### Programme Math à Moscou

[www.mccme.ru/mathinmoscow/](http://www.mccme.ru/mathinmoscow/)

#### Détails de soumission

[www.smc.math.ca/bulletins/Moscou\\_web/](http://www.smc.math.ca/bulletins/Moscou_web/)

Pour plus de renseignements veuillez communiquer avec votre département ou la SMC au 613-562-5702.

Date limite le **30 septembre 2007** pour le trimestre d'hiver 2008



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