CMS NOTES de la SMC

Call for nominations
2008 David Borwein Distinguished
Career Award
Appel de mises en candidature
prix David-Borwein de mathé-
maticien émérite pour l'ensemble
d'une carrière 2008   **p22**

DU BUREAU DU VICE-PRÉSIDENT
M. Bruno Rémillard
(HEC Montréal)

La primera reunión conjunta del matemáticas Canadá-México fue un gran éxito

Oui, le premier congrès joint des sociétés mathématiques canadienne et mexicaine, tenu au *Centro de Investigación en Matemáticas* (CIMAT) à Guanajuato, du 21 au 23 septembre, fut un grand succès, tant du point de vue scientifique que culturel.

Il y a eu environ 180 exposés touchant onze domaines des mathématiques, la moitié des présentations étant faites par des chercheurs canadiens. Il y a eu aussi six conférences plénières données par Francisco Gonzalez Acuña (UNAM & CIMAT), David Brydges (UBC), Gonzalo Contreras (CIMAT), Pengfei Guan (McGill), Jorge Urrutia (UNAM), et Maciej Zworski (UC Berkeley).

Le comité scientifique était composé de J.C. Gómez Larrañaga (président), Lourdes Palacios, et Fernando Brambila, du coté mexicain, tandis que du coté canadien, les membres étaient Alejandro Adem (président), Andrew Granville ainsi que Walter Craig. Finalement, les responsables locaux étaient Luis Hernandez-Lamoneda (président) et Victor Nuñez-Hernandez. Ils ont effectué un travail remarquable en mettant tout en place dans des délais assez courts. Le seul élément qui leur a vraisemblablement échappé a été la pluie!

L'établissement hôte du congrès, le centre de recherche CIMAT, a été établi dans la ville de Guanajuato en 1980 et il est subventionné par CONACyT, l'équivalent mexicain de notre CRSNG. Les activités scientifiques de CIMAT sont groupées autour de trois axes principaux : mathématiques pures, probabilités et statistiques, et informatique. Plusieurs conférences y sont tenues durant toute l'année. Du point de vue académique, le centre de recherche offre des programmes de deuxième et troisième cycle, ainsi qu'un programme de premier cycle, ce dernier en collaboration avec l'université de Guanajuato. Le centre de recherche est bien outillé, possédant toutes les infrastructures modernes. Du point de vue localisation, il surplombe la ville de Guanajuato. Le point de vue là-haut est splendide.

La ville de Guanajuato possède une riche histoire. Comme on peut le lire sur leur site web, Guanajuato est topologiquement équivalent à *Quanashuato*, qui signifie *habitat montagneux de grenouilles* (la traduction est mienne!). Pendant longtemps, l'endroit a été difficile d'accès, ce qui n'a pas empêché le peuple Chichimecas de s'y établir. Selon la légende, ils auraient remarqué

qu'une des montagnes avait une forme semblable à une grenouille, un des animaux fétiches qu'ils vénéraient. Enfin, à la fin du dix-huitième siècle, la ville comptait sur une des plus grandes mines d'argent au monde, ce qui a laissé d'innombrables tunnels, empruntés aujourd'hui principalement pour la circulation automobile. Y circuler en taxi est toute une expérience!

En plus du coté scientifique du congrès, il y a eu un programme social chargé, composé de trois événements : le traditionnel cocktail de bienvenue, une *callejoneada,* ainsi qu'une fiesta mexicaine, tenue le dernier soir.

Une *callejoneada* est suppose être une visite (se déroulant lentement) à travers les rues du centre-ville de Guanajuato, en compagnie de musiciens et d'une gourde de vin que les participant boivent en se promenant, tout en écoutant les histoires et légendes des rues qu'ils traversent.

Malheureusement pour les participants à cette activité tant attendue, de fortes pluies les ont contraints, après quelques

EDITORIAL

by S. Swaminathan
Dalhousie University

WHERE CREDIT IS DUE

Within the last two decades two famous mathematical problems were solved: Fermat's Last Theorem by Andrew Wiles and the Poincaré Conjecture by Grigori Perelman. Wiles obtained the Wolf Prize in 1995 and Perelman was awarded the Fields Medal at the recent International Congress of Mathematicians at Madrid in August 2006. These facts are widely known as also the fact that Perelman has refused to accept the Fields Medal. It is said that he would also refuse the Clay Institute Prize of one million dollars (U.S.), the Poincaré Conjecture being one of the seven Millennium problems. What is not so well known is that many other contemporary mathematicians paved the way by attacking these problems and proving equivalent forms involving other disciplines, which became more tractable. It is true, of course, that both Wiles and Perelman worked very hard on the equivalent conjectures.

In the case of Fermat's Last Theorem, Leo Mordell, Igor Shafarevich, Parshin, Gerd Faltings, Gerhard Frey, Ken Ribet, J. P. Serre, Y. Taniyama and Richard Taylor were the major players who paved the way and the story of how the intermediate stages unfolded has been told. Gerd Faltings was the recipient of a Fields medal for his work.

The Poincaré conjecture is a consequence of a particular case of William Thurston's Geometrization Conjecture which asserts that every 3-manifold has a canonical topological decomposition into pieces that can be endowed with one of eight model geometries. Bill Thurston was recognized for his work on the classification of 3-manifolds with a Fields medal in 1982, awarded in 1983. It was Richard Hamilton of Cornell University who introduced the so-called Ricci flow equation and developed a technique to rescale the flow in space and time, obtained Ricci flows with bounded curvature and tried to take a limit of these rescaled flows. An important problem in this strategy is the existence of limits. Perelman solved this problem first and then defined and also proved the existence of a Ricci flow with surgery, which was the main goal of Hamilton. Further he proceeded to iterate the surgery technique and showed it can be repeated indefinitely, which led to the final solution.

The 2006 Nobel Prize in Physics was awarded to two Big Bang theorists, George Smoot of UCLA and John C. Mather of NASA's Goddard Space Flight Center. These two scientists discovered the nature of 'blackbody radiation', cosmic background radiation believed to stem from the 'big bang' of the origin of the universe.

Dwight Morrow, an American lawyer and diplomat, wrote, in a letter to his son, "the world is divided into people who do things and people who get the credit. Try, if you can, to belong to the first class. There is far less competition."

It would be nice if R. Hamilton's contribution to the Poincaré conjecture, and the work of other mathematicians toward Fermat's Last Theorem are also recognized.

ÉDITORIAL

par S. Swaminathan
Dalhousie Université

RENDRE À CÉSAR CE QUI EST À CÉSAR

Deux problèmes mathématiques célèbres ont été résolus au cours des vingt dernières années : le dernier théorème de Fermat, par Andrew Wiles, et la conjecture de Poincaré, par Grigori Perelman. Andrew Wiles a reçu le prix Wolf en 1995, et Grigori Perelman a reçu la médaille Fields au dernier Congrès international des mathématiciens tenu à Madrid en août 2006. Tout cela est bien connu, comme le fait que Perelman a refusé la médaille Fields. On dit aussi qu'il refusera le prix d'un million de dollars américains promis par l'Institut Clay, la conjecture de Poincaré étant l'un des sept problèmes du millénaire établis par l'Institut. Moins connus toutefois sont les nombreux autres mathématiciens contemporains qui ont ouvert la voie à la résolution ultime en prouvant des formes équivalentes à l'aide d'autres disciplines. Il va sans dire que Wiles et Perelman ont tout de même travaillé très fort sur les conjectures équivalentes.

Dans le cas du dernier théorème de Fermat, Leo Mordell, Igor Shafarevich, Parshin, Gerd Faltings, Gerhard Frey, Ken Ribet, J. P. Serre, Y. Taniyama et Richard Taylor ont été les principaux mathématiciens à préparer le terrain, et la petite histoire de ce qui s'est produit entre les deux a déjà été racontée. Gerd Faltings a reçu la médaille Fields pour ses travaux.

Quant à la conjecture de Poincaré, c'est le résultat d'un cas particulier de la conjecture de géométrisation de William Thurston, selon laquelle chaque variété à trois dimensions admet une décomposition topologique canonique en des morceaux qui peuvent être dotés par une des huit géométries modèles. Pour ses travaux sur la classification des variétés à trois dimensions, Bill Thurston a obtenu la médaille Fields en 1982, qu'il a reçue en 1983. C'est Richard Hamilton de l'Université Cornell qui a introduit ce qu'on appelle l'équation de flot de Ricci, a développé une technique pour réétalonner le flot dans l'espace et le temps, a obtenu les flots de Ricci avec une courbure bornée et a essayé de trouver une limite pour ces flots. L'une des graves lacunes de cette stratégie est l'existence des limites. Perelman a d'abord résolu ce problème, puis il a défini et prouvé l'existence du flot de Ricci avec chirurgie, ce qui était le principal objectif de Richard Hamilton. Il a ensuite réitéré la technique de « chirurgie » et montré qu'elle pouvait être répétée à l'infini, ce qui l'a conduit à la solution finale.

Le prix Nobel de physique 2006 a été décerné à deux théoriciens du Big Bang, George Smoot (UCLA) et John C. Mather (Goddard Space Flight Center de la NASA). Ces deux scientifiques ont découvert le « spectre du corps noir et de l'anisotropie du rayonnement cosmique micro-ondes », qui découleraient du Big Bang à l'origine de l'univers.

Dans une lettre à son fils, l'avocat et diplomate américain Dwight Morrow écrivait : « Le monde est divisé en deux catégories de personnes : celles qui veulent réaliser quelque chose et celles qui veulent être quelqu'un. Tâche, si tu le peux, d'appartenir à la première. La concurrence y est bien moins féroce. »

Il serait admirable que les travaux de R. Hamilton sur la conjecture de Poincaré et ceux d'autres mathématiciens sur le dernier théorème de Fermat soient aussi reconnus.

minutes seulement, à se réfugier dans les tunnels. La gravité aidant, l'eau a commencé à envahir les tunnels, pendant que les musiciens continuaient à jouer, rappelant un peu une célèbre scène du film Titanic !

Avant que le niveau de l'eau n'atteigne quinze centimètres, la plupart des gens avaient fui, incluant les musiciens. Disons que le lendemain, il était assez facile de distinguer ceux qui s'étaient fait piéger dans les tunnels. Compte tenu de la température, les organisateurs ont remboursé les participants qui le demandaient.

L'idée de tenir une réunion conjointe avec le Mexique a été évoquée il y a environ un an seulement. Grâce aux efforts de plusieurs personnes dévouées, tant du coté canadien que mexicain, les relations entre les deux sociétés mathématiques se sont développées et la l'intéressante réunion conjointe a pu avoir lieu. Des remerciements particuliers doivent être adressés à Alejandro Adem, qui s'est fait le promoteur de cette rencontre depuis les tous débuts. Sans ses efforts et son dévouement, cet événement remarquable n'aurait pas eu lieu dans un si bref délai.

On peut maintenant se demander pourquoi avoir attendu aussi longtemps! Le Mexique est assez près géographiquement et c'est un de nos partenaires économiques majeurs. Il est donc tout à fait logique d'avoir avec lui de bonnes relations culturelles et scientifiques, d'autant plus que le Mexique possède une forte tradition mathématique. Il est encourageant de voir que le gouvernement mexicain participe maintenant au financement de la station de recherche de Banff, à travers son agence CONACyT.

Il faut maintenant regarder vers l'avenir. Suite à cette première réunion conjointe, plusieurs personnes ont établi ou réactivé des liens scientifiques avec leurs collègues mexicains. Il faut espérer que ces liens s'affermiront avec le temps. Nous en mesurerons la force en août 2009 à Vancouver, où doit se tenir la prochaine réunion conjointe des sociétés mathématiques mexicaine et canadienne.

Hasta luego !

LETTER TO THE EDITOR

Dear Professor Swaminathan,

After reading your editorial in the October *CMS NOTES*, I thought I would tell you a story which I like to tell my students, postdocs and collaborators on those sad occasions when the referee differs from our own judgement:

One of the greatest mathematics papers of the twentieth century was the 1922 article, *On the rational solutions of the indeterminate equations of the 3rd and 4th degrees* by L.J. Mordell.

In it Mordell proved a famous conjecture of Poincaré, that the group of rational points on an elliptic curve is always finitely generated (the first key result in the modern theory of elliptic curves leading eventually to the proof of Fermat's Last Theorem and much else besides), and he dared conjecture that any algebraic curve of genus >1 has only finitely many rational points, a central motivation of research in the twentieth century culminating in Faltings' Fields medal winning proof. On the basis of this great paper (and other things) Mordell became a Fellow of the Royal Society and succeeded Hardy as the Sadlerian Professor at Cambridge. In his *Reminiscences of an octogenarian mathematician*, Mordell wrote: "I was very unfortunate with this paper. It was rejected by the London Mathematical Society; I really don't know why. Perhaps they did not approve of my style ..."   Evidently this can happen to anyone on any paper!

Andrew Granville, Université de Montréal

Faltings, G., Endlichkeitssätze für abelsche Varietäten über Zahlkörpern, [Finiteness theorems for abelian varieties over number fields], *Invent. Math*. 73 (1983), no. 3, 349-366.

Mordell, L.J., On the rational solutions of the indeterminate equations of the 3rd and 4th degrees, *Proc. Camb. Phil. Soc*. 21 (1922), 179-192.

Mordell, L.J., Reminiscences of an octogenarian mathematician., *Amer. Math. Monthly* 78 (1971), 952-961.

PROBLEM OF THE MONTH
The following problem was submitted by Dr Stan Wagon of Macalester College.

One Million Factorial

What is the rightmost digit of one million factorial? No, that's too easy - what is the rightmost *nonzero* digit of one million factorial?

Send your own favorite problems to: notes-editors@cms.math.ca

Call for Sessions – CMS Winter 2007 Meeting
Appel de sessions – Réunion d'hiver 2007 de la SMC

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 l'hôtel Hilton de London, Ontario, du 8 au 10 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.

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 8-10, 2007) at the Hilton Hotel in London, 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.

Algebraic Stacks
Piles algébriques
Org: Ajneet Dhillon (UWO)

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

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

Computer Algebra: Algorithmic Challenges in Polynomial and Linear Algebra
L'algèbre informatique: Défis algorithmiques dans l'algèbre polynomiale et l'algèbre linéaire
Org: Stephen Watt (UWO)

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

Mathematics Education
Éducation mathématique
Org: George Gadanidis (UWO)

Non-Commutative Geometry
Géométrie non commutative
Organizer: Masoud Khalkhali (UWO)

Meeting Director / Directeur de la Réunion
J. F. Jardine
Department of Mathematics
University of Western Ontario
Middlesex College
London, ON N6A 5B7
jardine@uwo.ca

Deadline: December 22, 2006
Date limite : 22 décembre, 2006

CMS-MITACS Joint Conference 2007	CMS Winter 2007 Meeting	Second Canada-France Meeting 2008	CMS Winter 2008 Meeting
Host: University of Manitoba May 31 - June 3, 2007 Winnipeg, Manitoba	Host: University of Western Ontario December 8 - 10, 2007 London, Ontario	Host: Centre de recherches mathématiques May 31 - June 6, 2008 Montréal, Québec	Host: Carleton University December 2008 Ottawa, Ontario

FROM THE VICE-PRESIDENT'S DESK

Bruno Rémillard
(HEC Montréal)

La primera reunión conjunta del matemáticas Canadá-México fue un gran éxito

Yes, the first joint meeting between the Mexican and Canadian mathematical societies, held at the *Centro de Investigación en Matemáticas* (CIMAT) in Guanajuato, from September 21-23 was indeed a great success, both from the scientific and cultural points of view.

There were about 180 scheduled talks, distributed into eleven areas of mathematics; almost half of the talks were given by Canadian researchers. There were also six plenary sessions given by Francisco Gonzalez Acuña (UNAM & CIMAT), David Brydges (UBC), Gonzalo Contreras (CIMAT), Pengfei Guan (McGill), Jorge Urrutia (UNAM), and Maciej Zworski (UC Berkeley).

The scientific committee was composed of J.C. Gómez Larrañaga (Chair), Lourdes Palacios, and Fernando Brambila from the Mexican side, and Alejandro Adem (Chair), Andrew Granville and Walter Craig from the Canadian side. The local organizers were Luis Hernandez-Lamoneda (Chair) and Victor Nuñez-Hernandez. They did a magnificent job in putting everything together in a relatively short time. The only element they could not master was the rain!

The host organization, CIMAT, was established in the city of Guanajuato in 1980 and is funded by CONACyT, the Mexican equivalent of NSERC. This research centre is organized in three main areas: Pure Mathematics, Probability/Statistics, and Computer Science. They host several events all year long. CIMAT offers graduate and undergraduate programs, the latter in collaboration with University of Guanajuato. CIMAT has all the modern infrastructures. It is located outside the city and in fact it overhangs the city of Guanajuato. The view up there is spectacular.

The city of Guanajuato has a rich history. As one can learn from the web site of the city, Guanajuato took its name from the topologically equivalent word *Quanashuato*, meaning *Mountainous place of frogs*. For a long time the area was only accessible with difficulty. However, in the sixteenth century, the Chichimecas chose to establish a settlement here, because, according to the legend, they saw a mountain with the shape of a frog, one of the animals they worshipped. At the end of the eighteenth century, the city contained one of the largest silver mines in the world. It has left below the surface a network of tunnels, now used as roads. Travelling through these tunnels by taxi is quite an experience!

In addition to the scientific side of the meeting, there were also social events. The program was composed of three main events: the traditional cocktail party, a *callejoneada* and a Mexican Fiesta on the last evening.

A *callejoneada* is supposed to be a stroll (at a very slow pace) through the alleys in downtown Guanajuato accompanied by a group of musicians and where all participants are given a flask of wine to sip while the stories of the alleys are explained, and traditional songs are performed.

Unfortunately for those who attended that promising event, it was stopped abruptly after a few minutes because of heavy rainfall. Many people took refuge into the tunnels. Because of gravity, after some time the rain started filling the tunnels, while the musicians were still playing, making one think of a famous scene from the movie *Titanic*!

By the time the level of water reached fifteen centimetres, most people were gone. Let's say that the next morning, it was easy to guess who was trapped into the tunnels. Due to the weather conditions, the organizers kindly reimbursed those who asked.

The idea of organizing a joint meeting was raised only one year ago. Thanks to many dedicated individuals from both the CMS and SMM, the relationship between the two societies has flourished, and the wonderful Guanajuato meeting has now taken place. Special thanks are due to Alejandro Adem, who championed this initiative from its inception. Without his hard work and determination, it would never have come to pass.

One can now ask why we have waited so long! Mexico is relatively close and it is now one of our main economical partners. It is just logical to have strong cultural and scientific relations, more especially as Mexico has a strong tradition in Mathematics. Speaking of partnership, it is a good sign that the Mexican government now participates in the financing of the Banff International Research Station, through its funding agency CONACyT.

One now has to look towards the future. Following this first joint meeting, several people established or reactivated scientific bonds with their Mexican colleagues. It is hoped that these bonds will be strengthened with time. We will measure the force of these interactions in August 2009 in Vancouver, where the second Canada/Mexico meeting will be held.

Hasta luego!

R.L. Moore, Mathematician and Teacher
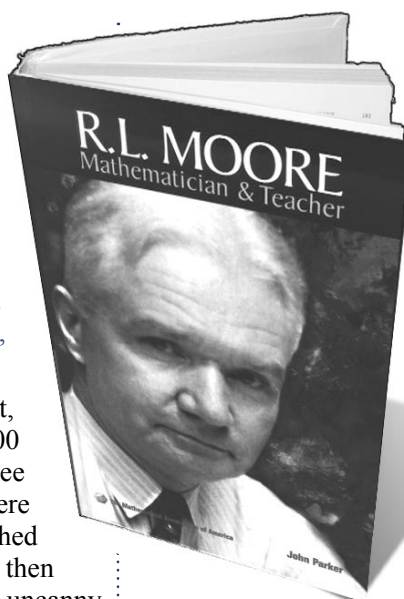
by John Parker
MAA Spectrum 2005 xiv + 387 pages

MORE THAN THIRTY years after his death, R.L. Moore remains a controversial figure. I have recently returned from the 9th annual Legacy of R.L. Moore conference, where more than 150 mathematicians and educators discussed Moore's teaching methods and, more generally, "inquiry-based learning".

Moore was an outstanding geometer and topologist, who had 50 Ph.D. students and more than 1600 doctoral descendants. Not only Moore, but also three of his students were presidents of the AMS; five were presidents of the MAA. Many others had distinguished careers. Yet his University of Texas at Austin was not then one of America's leading universities. Moore had an uncanny ability to recognize hidden talent and to develop it.

Who was this man, what were his teaching methods, and why was he controversial? These questions are well answered in this biography. Unlike some writings by his students, which tend toward the hagiographical, this work presents him warts and all. In particular, his racism is not glossed over.

Moore had students do research at their own level in a system that minimized lectures and forbade consultation of books or other students. Moore's personality, his enormous teaching load (which he fought efforts to decrease), and a couple of professorial fellow travelers enabled him to get away with such control. Most current practitioners use some sort of "modified Moore method" which is less stringent, but still aims to develop the student's ability to construct proofs and discern the flaws in their own and others' attempted proofs, while de-emphasizing book-learning.

Parker's book covers Moore from birth — and even his antecedents — to death, and is based on extensive research in the archives at the University of Texas, which has substantial written and tape-recorded material about Moore. As a Moore "grandson", I appreciated learning the facts about his many battles with the University authorities and the truth behind the many tales I had been told over the years. The book is a good read, and will be enjoyed even by those who do not trace their lineage back to this amazing curmudgeon. In particular, it will make you think about whether it is possible in your milieu to transform students as he did. Do you have a high school principal or pharmacy student in your class who could be the next R.H. Bing or Mary Ellen Rudin?

NEW AND NOTEWORTHY

Additive Combinatorics

Terence Tao and Van H. Vu

Cambridge Studies in Advanced Mathematics
$99.95: Hardback: 0-521-85386-9: 536pp

Multiplicative Number Theory I

Classical Theory

Hugh L. Montgomery and R. C. Vaughan

Cambridge Studies in Advanced Mathematics
$105.95: Hardback: 0-521-84903-9: 650pp

Random Fragmentation and Coagulation Processes

Jean Bertoin

Cambridge Studies in Advanced Mathematics
$76.95: Hardback: 0-521-86728-2: 256pp

Fundamentals of Hyperbolic Manifolds

Selected Expositions

Edited by R. D. Canary, A. Marden, and D. B. A. Epstein

London Mathematical Society Lecture Note Series
$82.95: Paperback: 0-521-61558-5: 348pp

Spaces of Kleinian Groups

Edited by Yair Minsky, Makoto Sakuma, and Caroline Series

London Mathematical Society Lecture Note Series
$82.95: Paperback: 0-521-61797-9: 398pp

Elliptic Functions

V. Armitage

London Mathematical Society Student Texts
$105.95: Hardback: 0-521-78078-0: 420pp
$50.95: Paperback: 0-521-78563-4

The Math Behind the Music

Leon Harkleroad

Outlooks
Co-published with the Mathematical Association of America
$82.95: Hardback: 0-521-81095-7: 200pp
$28.95: Paperback: 0-521-00935-9

The Art of Mathematics

Coffee Time in Memphis

Béla Bollobás

$99.95: Hardback: 0-521-87228-6: 360pp
$40.95: Paperback: 0-521-69395-0

Hilbert's Tenth Problem

Diophantine Classes and Extensions to Global Fields

Alexandra Shlapentokh

New Mathematical Monographs
$116.95: Hardback: 0-521-83360-4: 370pp

Free Ideal Rings and Localization in General Rings

P. M. Cohn

New Mathematical Monographs
$164.95: Hardback: 0-521-85337-0: 594pp

Combinatorics of Symmetric Designs

Yury J. Ionin and Mohan S. Shrikhande

New Mathematical Monographs
$152.95: Hardback: 0-521-81833-8: 534pp

A First Course in Mathematical Analysis

David Brannan

$105.95: Hardback: 0-521-86439-9: 368pp
$58.95: Paperback: 0-521-68424-2

Principles of Statistical Inference

D. R. Cox

$93.95: Hardback: 0-521-86673-1: 240pp
$40.95: Paperback: 0-521-68567-2

Second Edition!

Data Analysis and Graphics Using R

An Example-based Approach

John Maindonald and John Braun

Cambridge Series in Statistical and Probabilistic Mathematics
$93.95: Hardback: 0-521-86116-0: 500pp

Pattern Formation

An Introduction to Methods

Rebecca Hoyle

$93.95: Hardback: 0-521-81750-1: 432pp
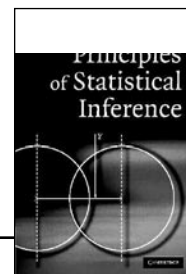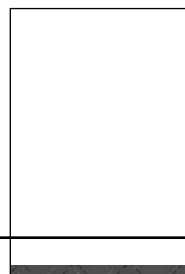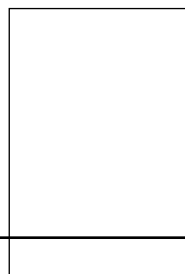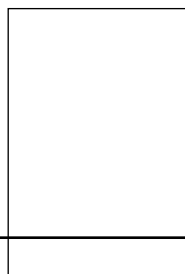
Multiple Scattering

Interaction of Time-Harmonic Waves with N Obstacles

Paul Martin

Encyclopedia of Mathematics and its Applications
$164.95: Hardback: 0-521-86554-9: 472pp

Suggested Canadian prices subject to change.

The Cube: A Window to Convex and Discrete Geometry

by Chuanming Zong
Cambridge Tracts in Mathematics 168
*Cambridge 2006 x + 174 pages US$70*

THE *N*-DIMENSIONAL UNIT cube and its dual, the n-dimensional cross-polytope, have several incarnations. Each can be thought of as a graph of vertices and edges; or as a convex body with a hierarchy of faces; or as a unit ball generating an important metric on $\mathbb{R}^n$. The cube tiles $\mathbb{R}^n$, the cross-polytope does not.

Each centrally symmetric polyhedron in three-space is the projection of a suitable high dimensional cross-polytope because, if the polyhedron has $2n$ vertices, $\pm\mathbf{v}_1, \pm\mathbf{v}_2,...,\pm\mathbf{v}_n$, choose three linearly independent ones as a basis and extend this to a basis for $\mathbb{R}^n$. Now project the basis vectors onto the $\mathbf{v}_i$'s. On the other hand, projections of n-dimensional cubes are not so ubiquitous. If $(\mathbf{e}_1, \mathbf{e}_2,...,\mathbf{e}_n)$ is the usual basis for $\mathbb{R}^n$, the unit cube can be thought of as the (Minkowski) sum of the line segments $[-\mathbf{e}_i/2, \mathbf{e}_i/2]$. If the basis vectors are projected to $\mathbf{v}_1, \mathbf{v}_2,...,\mathbf{v}_n$ the cube projects to the sum of the line segments $[-\mathbf{v}_i/2, \mathbf{v}_i/2]$. This is a zonohedron (in $\mathbb{R}^3$), in general a zonotope, all of whose faces are centrally symmetric. Thus central cross-sections of a cube can be arbitrary symmetric polytopes (duals of projections of cross-polytopes) but projections of cubes are the restricted class of zonotopes. This illustrates two things: (a) how interesting and complicated high dimensional cubes are; and (b) how different the operations of cross-section and projection are despite their duality.

The purpose of this delightful book is to explore item (a). Rather surprisingly, duality and cross-polytopes don't get mentioned. The exploration consists of detailed analyses of a number of very specific quantitative questions. Chapter 1 is concerned with determining the largest (in terms of k-dimensional volume) and smallest k-dimensional cross-sections of a cube. Chapter 2 asks the same questions for projections. It is interesting that the solutions to the first (due to Vaaler for the lower bound and to Ball for upper bounds) are analytic in nature while those for the second (due largely to Chakerian and Filliman) use linear algebra.

The next question, in Chapter 3, is also a maximization problem: what is the largest simplex that can be inscribed in a unit cube? Since it is easy to show that a maximal simplex has its vertices among the vertices of the cube one is immediately led to the evaluation of determinants all of whose entries are ±1 and to Hadamard matrices. Chapter 4 also deals with simplices inside the cube and asks for the minimal triangulation of a cube. This is a transitional chapter leading from the "convex geometry" part to the "discrete geometry" part.

The last four chapters are much more combinatorial in outlook. Chapter 5 deals with other polytopes (besides simplices) inscribed in the cube with vertices at vertices of the cube. These are the so-called 0/1 polytopes (for this chapter the unit cube has been translated to have one vertex at **0**). The
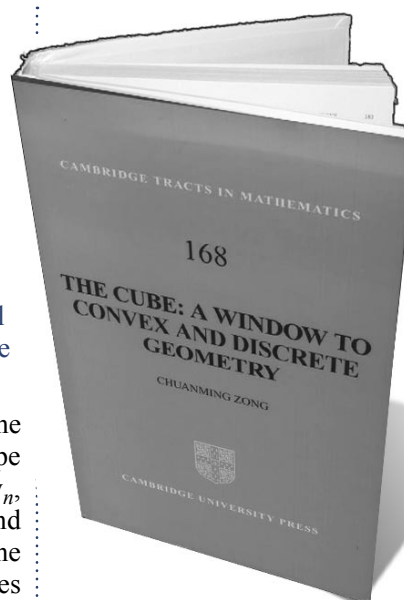
final three chapters concern tilings of space by cubes and deal, respectively, with Minkowski's conjecture, Furtwängler's conjecture and Keller's conjecture. These conjecture that in a particular class of tilings by the unit cube there must always be a pair of "twins", *i.e.* a pair of tiles that have a whole facet in common. Minkowski's conjecture (the most restrictive) has been established by Hajós, and there are now counterexamples (due to Lagarias, Shor and Mackey) to Keller's conjecture for $n \geq 8$. These results and those of Hajós and Robinson for Furtwängler's conjecture are given here.

The book is very clearly written in a concise, direct style. The notation and terminology are both fairly standard and very clear. I only have two quibbles here. Why use $\|\mathbf{x}, \mathbf{y}\|$ for the distance between two vectors rather than $\|\mathbf{x} - \mathbf{y}\|$? and why, if the unit ball in Euclidean space is the one with radius 1, is the unit cube the one with radius 1/2 (in the max norm)?

This brief summary perhaps gives some indication of the broad vista of mathematics that can be viewed through the unit cube. That vista is filled with interesting problems some of which have been solved but most only partially so. This book does exactly what its title indicates. It takes us on a tour of the landscape visible through the cube with special emphasis on convex geometry in the first half and discrete geometry in the second. The equipment needed for the tour is quite modest: linear algebra and a little analysis should suffice. It is a tour well worth taking and I highly recommend it to all mathematical tourists.

Letters to the Editors
Lettres aux Rédacteurs

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

BRIEF BOOK REVIEWS

By S. Swaminathan
Dalhousie University

Logic in Tehran, Proceedings of the Workshop and Conference in Logic, Algebra and Arithmetic, October 18-22, 2003
Edited by Ali Enayat, Iraj Kalantari and Mojtaba Monjri
Lecture Notes in Logic 26
A. K. Peters 2006, xvi + 341 pp

This volume contains papers that are revised and expanded versions of those that were presented at the workshop in Tehran, Iran. Noteworthy among them are: On explicit definability in arithmetic, by Lou van den Dries; Local-global principles and approximation theorems, by Yuri L. Ershov; Additive polynomials and their role in the model theory of valued fields, by Franz-Viktor Kuhlmann; Dense subfields of henselian fields, and integer parts, by Franz-Viktor Kuhlmann; Remarks on algebraic D-varieties and the model theory of differential fields, by Anand Pillay; Categories of theories and interpretations, by Albert Visser.

Convex Functions and Their Applications
By Constantin Niculescu and Lars-Erik Persson
CMS Books in Mathematics
Springer 2006, xvi + 255 pp

"Convex functions play an important role in many branches of mathematics, as well as other areas of science and engineering. The present text aims to present a thorough introduction to contemporary convex function theory, which entails a powerful and elegant interaction between analysis and geometry. A large variety of subjects is covered, from one real variable case (with all its mathematical gems) to some of the most advanced topics such as Choquet's theory, the Perkopa-Leindler type inequalities and their ramifications, the variational approach to partial differential equations and convex programming. The book can be used for a one-semester graduate course and also as a valuable reference and source of inspiration for researchers working with convexity. The only prerequisite is a background in advanced calculus and linear algebra. Each section ends with exercises, while each chapter ends with comments covering supplementary material and historical information."

Numerical Solution of Partial Differential Equations
By K. W. Morton and D. F. Mayers, Second Edition,
Cambridge University Press 2005, xiii + 278 pp, US$43.00

This second edition textbook on the numerical techniques used to solve partial differential equations arising from mathematical models in science, engineering and other fields. The book concentrates on the thorough treatment of standard numerical techniques which are chosen on the basis of their general utility for practical problems. The emphasis is on finite difference methods for simple examples of parabolic, elliptic and hyperbolic equations, but there are brief descriptions of general finite element method and a new section on finite volume methods. There are new sections on modified equation analysis, symplectic integration schemes, convection-diffusion problems, multigrid methods and conjugate gradient methods.

First Steps for Math Olympians, Using the American Mathematics Competitions
By J. Douglas Faires
MAA Problem Books
MAA 2006, xxi + 305 pp

A major aspect of mathematical training and its benefit to society is the ability to use logic to solve problems. The American Mathematics Competitions (AMC) have been given to high school students for more than 50 years. This book contains the basic ideas behind the solutions to the majority of these problems and presents examples and exercises from past exams to illustrate the concepts. Students preparing for competitions and those interested in logical problem solving would find this book helpful. Each chapter begins with a discussion of the mathematical topics needed for problem solving. Three well-chosen examples illustrate a variety of problem-solving strategies and applications of concepts. The examples are followed by ten exercises, graduated in difficulty so that nearly every student reader will be able to solve at least one problem easily and nearly every reader will struggle with at least one. Solutions to exercises are provided in a separate chapter.

Geometry and Topology
By Miles Reid and Balázs Szendröi
Cambridge University Press 2005, xviii +196 pp

"Geometry provides a whole range of views on the universe, serving as the inspiration, technical toolkit and ultimate goal for many branches of mathematics and physics. The book introduces the ideas of geometry, and includes a generous supply of simple explanations and examples. The treatment emphasizes coordinate systems and the coordinate changes that generate symmetries. The discussion moves from Euclidean to non-Euclidean geometries, including spherical and hyperbolic geometry, and then onto affine and projective linear geometries. Group theory is introduced to treat geometric symmetries, leading to the unification of geometry and group theory in the Erlangen program. An introduction to basic topology follows, with the Möbius strip, the Klein bottle and the surface with g handles exemplifying quotient topologies and the homeomorphism problem. Topology combines with group theory to yield the geometry of transformation groups. A final chapter features historical discussions and indications for further reading. The book requires minimal prerequisites and provides a first glimpse of many research topics in modern algebra, geometry and theoretical physics."

Correction - In the October issue of the Notes, in his review of "Number Theory: An Introduction to Mathematics" by W.A. Coppel, we inadvertently gave John Dixon's affiliation as McGill University. Dr Dixon is in fact at Carleton University. We apologize for the error.

MATHEMATICAL ATTAINMENT AND CULTURE

Some of our readers might have noticed a column in the *Globe and Mail* on September 26, 2006, in which Margaret Wente commented on the recent apparent about-turn in the stance of the US *National Council of Teachers of Mathematics* towards mastery of mathematical skills by the young. This transformation is held to be due, in part, to the success of skills instruction in Asian countries, in particular Singapore, Hong Kong and South Korea. There is no doubt about the disputes, particularly south of the border, around NCTM pronouncements and *their interpretation*, nor about the bitterness of the "Math Wars" that have pitted reformists and traditionalists against each other. So it is natural for those who saw NCTM as soft on basics to make much of its return to the fold. My difficulty with Ms. Wente's column is not so much about her allegations — that institutions including textbook publishers, educational faculties, professional organizations, education ministries and teachers themselves develop a vested interest in the status quo and become resistant to change — but with the idea that if we mechanistically adopt some version of "right thinking", our problems will be solved.

I will leave it to the readers to check (on the website **www.nctm.org/focalpoints/**) how much the *Focal Points* recently issued by the NCTM is a departure from and how much an amplification of its previous documents. Certainly, teachers are enjoined to insure that Grade 4 pupls develop quick recall of multiplication and division facts, Grade 5 pupils become fluent with efficient procedures, Grade 6 pupils master standard procedures for, say, division, Grade 7 pupils have a more systematic approach to proportionality with explicit reference to the unit and Grade 8 pupils begin algebra with the study of linear functions and equations. But the more affective aspects of pedagogy are not forgotten either. An uncharitable observer might be inclined to the view that educators with strong feelings will pull out of the document whatever they wish to find there.

I am currently reading a volume which provides some useful perspective, the Study Volume arising out of the thirteenth study of the *International Commission on Mathematical Instruction* (ICMI):

Mathematics Education in Different Cultural Traditions:

A Comparative Study of East Asia and the West
edited by Frederick K.S. Leung, Klaus-D. Graf, Francis J. Lopez-Real
xiv+596 pages, Springer, New York, 2006 ISBN-10: 0-387-29722-7 (HB); -13: 978-0387-29722-4 (HB)

More information about the Study can be gleaned from the website **www.inf.fu-berlin.de/inst/ag-bg/ev/icmi13/main.html** or **www.inf.fu-berlin/icmics.**

The papers in the volume make it clear that, in assessing the success of a system of education, we must look beyond syllabus, pedgogical technique, rhetoric of curriculum documents, published state policy and examinations to the environment in which it resides. What are the intellectual, social and cultural priorities? What is the traditional framework? How important are such attributes as ambition, diligence, industry and respect for authority? How singleminded is the vision that informs educational goals?

While, for reasons of manageability, the Study focussed only on East Asia (reflecting the Chinese/Confucian tradition) and the West (reflecting the Greek/Latin/Christian tradition), important themes are drawn out. Many of the participants were Asian, and their critical analysis of their systems provides an invaluable guide to the Western reader. They reveal an Asian polity that, with all its strengths, is neither as monolithic or unqualifiedly successful as Western detractors of North American education would like to claim. Even though Singapore, the Republic of Korea, Chinese Tapei, Hong Kong and Japan were the five best performers in the international assessment TIMSS-R Mathematics Achievement Scale, this was not accompanied by positive attitudes by the students towards mathematics. Many observors in the Orient are concerned that, once the tests are passed, many students simply do not retain the mathematics they have learned or wish to have anything more to do with the field. Consider this episode related by Ichiei Hirabayashi about the recent reforms in Japan which reduced the difficulty of the syllabus:

> [I asked a principal of a Lower Secondary School] if the population of pupils who like mathematics has increased more than before. He decisively replied, "No, absolutely no! Incapable pupils are still incapable and dislike mathematics even though it became easy, and more than that, able pupils have left mathematics because it became easy and trifling for them. Then the population of math-haters has increased more than before." (page 63)

The Study Volume makes it clear how much the success of East Asian countries depends on a rich cultural tradition, underpinned by the values of Confucianism and Buddhism that prize intellectual activity, diligence and self-growth. These are transmitted to children both at home and in the classroom. The presence of these attributes would probably lead to better success for whatever reforms are undertaken to encourage pupils to explore and investigate for themselves. Indeed, while the school syllabus reflects Western ideas of mathematics and its logical processes, the region has an indigenous mathematics tradition which in the past involved lay people with no concern for material gain but wished to increase their enjoyment, self-actualization or reputation. Hirabayashi remarks,

> I think that in schools of our country [Japan], this atmosphere, so to speak GEI-esprit [an ideal of self-development] may be implicitly existing in the mode of teaching and learning mathematics and if it is true, as someone says, that a decline of mathematics education is now beginning in schools of our country, it would be due to the shortage of GEI-esprit

in mathematics education in recent years. Indeed, teachers in schools may be apt to become a mere living teaching machine with little attractive effect produced from his/her own personality and humanity. To see the circumstances of today's mathematics education in Japan from this aspect, we should analyze the GEI-esprit more closely in its substance. (page 56)

He then goes on to remark that what needs to be learned in GEI "is not only the technique but the mind which sustains the GEI from inside" and that the teacher is crucial as GEI cannot be taught "without the direct guidance of the teacher".

To put the matter in more evangelical terms, the teacher becomes a witness of mathematics, conveying a kind of worldview. There is wisdom here for our hemisphere. The events of the last three decades should have taught us the futility of tinkering with the syllabus, its implementation and evaluation of students without paying attention to the culture in which all of this is taking place. Why is it important or desirable for children to learn mathematics? What should be the relationship between teacher and pupil in mathematics instruction? Are there values to be transmitted along with the syllabus? Columns such as that of Margaret Wente are a symptom of our failing to foster within public discourse a suitable vision of our discipline that will engender a social consensus and prevent our educational activities from working at cross purposes.

Math Central

For many years, a group at the University of Regina has serviced the Math Central website, which includes a variety of mathematical information and activities that school students would enjoy. On the site, one will find answers to queries, resources for elementary, middle and secondary school, material showing the human face of mathematics and information about our Society and provincial teachers' organizations. In particular, there is a regular problem. The one for September, 2006 is combinatorial: *(a) 15 chairs are equally spaced around a circular table on which are namecards for 15 delegates. Unfortunately, the delegates fail to notice the cards until they all sit down, and it is found that no one is sitting in front of his own card. Prove that the table can be rotated so that at least two delegates are simultaneously correctly seated. (b) Give an example of an arrangement in which just one delegate is correctly seated and for which no rotation will correctly seat more than one.* There is a bank of these problems going back for six years. The URL is

`http://mathcentral.uregina.ca/BB/index.html`.

A Classroom Problem on Linear Algebra

It is time for another linear algebra problem that might be of use to you from the collection that I compiled many years ago. This one requires more advanced material, so might be more suitable for a second rather than a first course in the subject.

An Algorithm for the Characteristic Polynomial and Inverse of a Matrix

Let A be an $n \times n$ matrix. Define recursively, for $1 \le k \le n$, the sequences $\{B_k\}$ and $\{c_k\}$ of matrices and scalars, respectively, by the equations

$$B_1 = A \qquad\qquad c_1 = \text{trace } B_1$$
$$B_k = A(B_{k-1} - c_{k-1}I) \qquad c_k = \tfrac{1}{k} \text{ trace } B_k$$

for $2 \le k \le n$.

(a) Prove that the characteristic polynomial of A is

$$x^n - c_1 x^{n-1} - c_2 x^{n-2} - \cdots - c_n$$

(b) Prove that $B_n = c_n I$, so that, if A is nonsingular, then

$$A^{-1} = c_n^{-1}(B_{n-1} - c_{n-1}I).$$

(c) Let $A = \begin{pmatrix} 4 & 2 \\ 1 & 3 \end{pmatrix}$. Determine B_1, c_1, B_2, c_2. Use these quantities to find the characteristic polynomial and inverse of A. Check your answers.

(d) Let $A = \begin{pmatrix} 1 & 0 & -1 \\ 3 & 2 & 2 \\ 4 & 1 & 0 \end{pmatrix}$. Determine B_1, c_1, B_2, c_2, B_3, c_3 as well as the characteristic polynomial and inverse of A.

Sketch of solution. Since trace $(P^{-1} X P) = $ trace X, it suffices to consider A as upper triangular with diagonal $(\lambda_1, \lambda_2, \cdots, \lambda_n)$. Let μ_k be the symmetric function of degree k and v_k the sum of the kth powers of the eigenvalues. Using the relations

$$v_k - \mu_1 v_{k-1} + \mu_2 v_{k-2} - \mu_3 v_{k-3} + \cdots + (-1)^{k-1} \mu_{k-1} v_1 + (-1)^k k\mu_k = 0$$

$(1 \le k \le n)$, it can be shown by induction that the ith diagonal element of B_k is equal to

$$\lambda_i^k - \mu_1 \lambda_i^{k-1} + \cdots + (-1)^{k-2} \mu_{k-2} \lambda_i 2 + (-1)^{k-1} \mu_{k-1} \lambda_i$$

and trace $B_k = (-1)^{k-1} k\mu_k$.

(e)

$$B_2 = \begin{pmatrix} -6 & -1 & 2 \\ 8 & 0 & -5 \\ -5 & -1 & -2 \end{pmatrix} \qquad B_3 = 3I$$

$$A^{-1} = \frac{1}{3} \begin{pmatrix} -2 & -1 & 2 \\ 8 & 4 & -5 \\ -5 & -1 & 2 \end{pmatrix}$$

$$\text{char } (A) = x_3 - 3x_2 + 4x - 3.$$

Forthcoming events at the Fields Institute are listed in the Calendar of Events in this issue of the CMS Notes. For an up-to-date listing with more details, see `www.fields.utoronto.ca/programs/scientific/`. If you would like to receive the listing monthly by email, log into `www.fields.utoronto.ca/maillist`.

Recent events

The thematic program this fall has been *Cryptography*, organized by Ian F. Blake (Toronto), Alfred Menezes (Waterloo), Michele Mosca (Waterloo and Perimeter Institute), Kumar Murty (Toronto), Renate Scheidler (Calgary), Andreas Stein (Wyoming), Ramarathnam Venkatesan (Microsoft) and Hugh Williams (Chair – Calgary). Gerhard Frey (Institut für Experimentelle Mathematik, Universität Duisburg-Essen) delivered the Coxeter Lectures September 25-27 on *Duality theorems in arithmetic geometry and applications*. These lectures (as well as talks in the workshops and earlier programs) are available at www.fields.utoronto.ca/audio. Details on activities in the *Cryptography* program can be found at `www.fields.utoronto.ca/programs/scientific/06-07/crypto/`.

The winner of the 2006 CRM-Fields-PIMS Prize, Nicole Tomczak-Jaegermann (Alberta), delivered her "prize lecture" *High dimensional convex bodies: phenomena, intuitions and results* on November 20 at the Institute.

Future Thematic Programs

The Winter / Spring 2007 thematic program is *Geometric Applications of Homotopy Theory*, organized by Rick Jardine (Lead Organizer – UWO), Gunnar Carlsson (Stanford) and Dan Christensen (UWO). This program will develop new applications of homotopy theory in algebraic geometry, number theory and mathematical physics, and will include subprograms on *Higher Categories and Their Applications* (January-February; workshop January 9–13), *Homotopy Theory of Schemes* (March-April; workshop March 26–30), Stacks in Geometry and Topology (May-June; workshop May 14–18). There will also be a conference *Motives and Algebraic Cycles, A Conference Dedicated to the Mathematical Heritage of Spencer J. Bloch*, March 19–23. The Distinguished Lecture Series will be given in May by Michael Hopkins (Harvard). See `www.fields.utoronto.ca/programs/scientific/06-07/homotopy/index.html` for more up-to-date information on this program.

During the Fall of 2007, the thematic program will be *Operator Algebras*,

organized by George Elliott (Toronto, chief organizer), Dietmar Bisch (Vanderbilt), Joachim Cuntz (Münster), Kenneth Davidson (Waterloo), Thierry Giordano (Ottawa), and Roland Speicher (Queen's). Three workshops are being scheduled: *Von Neumann Algebras, Structure of C*-Algebras,* and *Operator Spaces and Quantum Groups*. There will also be three graduate courses – *Introduction to Operator Algebras, Structure of C*-Algebras,* and *Free Probability*. Distinguished Lecture Series will be delivered by Uffe Haagerup (Odense) and Alain Connes (IHES). Application forms for office space or funding will be available in early 2007. See `www.fields.utoronto.ca/programs/scientific/07-08/operator_algebras/`

In the Winter/Spring term, 2008, the thematic program will be *New Trends in Harmonic Analysis*, organized by Izabella Laba (UBC, chief organizer), Alex Iosevich (Missouri – Columbia), Michael Lacey (Georgia Tech) and Eric Sawyer (McMaster). Jill Pipher (Brown) will be the Coxeter Lecturer. Three workshops are being scheduled: *Harmonic Analysis, Recent Advances in Operator Theory and Function Theory*, and *Arithmetic Combinatorics*. See `www.fields.utoronto.ca/programs/scientific/07-08/harmonic_analysis/index.html` for more details.

Publications

Several publications have recently appeared in the Fields Institute series. Those in our Communications series are *Topics in Kinetic Theory (Thierry Passot, Catherine Sulem and Pierre-Louis Sulem), Geometry and Topology of Manifolds* (Hans U. Boden, Ian Hambleton, Andrew J. Nicas and B. Doug Park), *Nonlinear Dynamics and Evolution Equations* (Hermann Brunner, Xiao-Qiang Zhao and Xingfu Zou). *Bifurcation Theory and Spatio-Temporal Pattern Formation* (Wayne Nagata and N.Sri Namachchivaya).

For details about these volumes and all of our Communications publications, please see `www.ams.org/cgi-bin/bookstore/bookpromo/ficseries`.

Recent publications in our Monograph series:

Modular Calabi-Yau Threefolds by Christian Meyer, *Coxeter Groups and Hopf Algebras* by Marcelo Aguiar and Swapneel Mahajan, Also to appear soon is *Introduction to Conformal Field Theory* by Kenji Ueno.

See `www.ams.org/cgi-bin/bookstore/bookpromo/fimseries` for more details and current information about our Monograph series.

Upcoming deadlines:

Lecture Series nominations – March 15

Fields Institute Fellows – February 15

CRM-Fields-PIMS Prize – October 1

Conferences and Workshops – October 15

PDF applications for the Operator Algebra and Harmonic Analysis thematic programs – the deadline has just passed, but late applications may be considered. For more details, follow "Proposals & Applications" on the Fields homepage `www.fields.utoronto.ca`

Carl Riehm, Fields Institute

DE RETOUR D'ESPAGNE

Christiane Rousseau
Université de Montréal

Au mois d'août s'est tenu le Congrès International des Mathématiciens, CIM 2006, précédé de l'Assemblée Générale de l'Union Mathématique Internationale (UMI).

L'Assemblée Générale de l'UMI s'est tenue à Santiago de Compostelle les 19 et 20 août. La délégation canadienne comprenait Donald Dawson, Nassif Ghoussoub, Richard Kane, Barbara Keyfitz qui avait accepté de remplacer Jonathan Borwein à 3 jours d'avis et moi-même. Nous sommes fiers que Bernard Hodgson ait été réélu comme secrétaire général de la Commission Internationale de l'Enseignement Mathématique (CIEM). Par contre nous n'avons toujours pas réussi à faire élire un canadien sur l'Exécutif de l'UMI. Nous avons appris pendant l'Assemblée Générale que Donald Dawson avait fait partie du jury pour les médailles Fields. Nous avons aussi appris avec surprise que le président du comité scientifique du CIM avait reçu des propositions de conférenciers pléniers de la part de mathématiciens, alors que, d'après les informations que nous avions recueillies directement auprès de l'Exécutif de l'UMI, il ne devait pas y avoir d'appel de candidatures. C'est un dossier que nous suivrons de très près pour le prochain ICM. Lors des quatre dernières années l'UMI a accentué ses activités auprès des pays en voie de développement. La Commission du Développement et des Échanges (CDE) a vu son budget substantiellement augmenté, à même les fonds de l'UMI et de contributions provenant de sociétés savantes ainsi que du fonds Abel. Sharon Laurenti a été engagée à demi-temps par l'UMI pour s'occuper au ICTP à Trieste de la gestion des programmes de la CDE et du Developing Countries Strategy Group (DCSG). Ces deux organismes ont été fusionnés pour former la nouvelle Commission for Developing Countries (CDC), dont la mission est d'identifier les besoins et de soutenir les initiatives. Suite à ces nouveaux développements, le besoin de nouvelles sources de financement se fait sentir. La contribution des pays membres de l'UMI augmentera de 5% par an pour les quatre prochaines années. L'Assemblée Générale a voté de recommander à l'Exécutif de l'UMI de se pencher sur une structure administrative stable et sur la recherche de sources de financement alternatives, pouvant aller jusqu'à la levée de fonds pour soutenir les activités de l'UMI, et de revenir à l'Assemblée Générale de 2010 avec une proposition concrète. Parmi les points saillants de l'Assemblée Générale, mentionnons la discussion des liens entre l'UMI et la Commission Internationale de l'Enseignement Mathématique (CIEM), suite à la proposition que, dans le futur, l'Exécutif de la CIEM soit élu par l'Assemblée Générale de la CIEM et non plus par l'Assemblée Générale de l'UMI comme cela s'est fait jusqu'à présent. Nous avons pu apprécier que nous nous distinguons au Canada par la maturité avec laquelle nos communautés de mathématiciens et de didacticiens collaborent dans les questions d'enseignement des mathématiques. Mentionnons enfin que l'Assemblée Générale a salué le travail du Committee on Electronic Information and Communication (CEIC) présidé par Jonathan Borwein. Le mandat du comité et Jonathan Borwein à sa tête ont été reconduits pour les deux prochaines années.

Lors de l'ouverture du Congrès International des Mathématiciens, l'annonce des prix de l'UMI a certainement marqué l'imaginaire de la communauté internationale, les journaux ayant déjà annoncé au préalable que Grigori Perelman avait refusé la médaille Fields que le comité Fields lui avait attribué. De l'intérieur cependant, tant la cérémonie d'ouverture que le congrès lui-même contrastaient avec les reportages lus dans les journaux. Nous avons eu droit à l'éloge de la science. Les récipiendaires des quatre médailles Fields, du prix Nevanlinna et du nouveau prix Gauss ont été présentés et l'essentiel des propos a porté sur leurs contributions scientifiques. Le président John Ball, qui présentait les récipiendaires des médailles Fields s'est contenté, après l'énoncé des résultats de Grigori Perelman, d'une courte phrase à l'effet que « Grigori Perelman avait décliné la médaille Fields. » Lors de la présentation des travaux des récipiendaires de prix, les travaux de Perelman ont reçu la même couverture que ceux des autres récipiendaires et une conférence spéciale de John Morgan « A report on Poincaré conjecture » a porté sur la présentation de ses travaux. Je salue cette retenue et cet hommage à la très belle science, contrastant avec le sensationnalisme dans la presse.

Guillermo Curbera s'était occupé des activités culturelles parmi lesquelles je mentionnerai une exposition très bien documentée sur l'histoire des ICM ain.

Notre communauté a tenu sa réception le 23 août en soirée à l'Hôtel Ritz. Cette réception avait pour but, entre autres, d'honorer les récipiendaires de prix et nous avons eu le plaisir d'honorer Andrei Okounkov et Wendelin Werner, médaillés Fields, Jon Kleinberg, récipiendaire du prix Nevanlinna, ainsi que Junko Itô, fille de Kiyoshi Itô, récipiendaire du nouveau prix Gauss. Nous avons aussi pu féliciter nos collègues conférenciers au CIM. Nous avons également pu remercier nos collègues espagnols qui se sont chargés de l'organisation d'un

Christiane Rousseau
Past President, CMS

événement d'une telle envergure, entre autres Manuel de León, président du comité local d'organisation, et Guillermo Curbera, réalisateur d'une exposition très bien documentée sur l'histoire des ICM. Linda Geraci de l'UMI avait amené une médaille Fields que tous ont pu examiner. Stuart Savage, Conseiller du Ministre à l'Ambassade du Canada à Madrid, a agi comme maître de cérémonie. Il a rappelé l'importance que le Canada accorde aux sciences et souligné les nombreux partenariats scientifiques entre l'Espagne et le Canada. Mme. Mercedes Cabrera Calvo-Sotelo, ministre de l'éducation et de la science d'Espagne, nous a honorés de sa présence. Nos invités se sont présentés en grand nombre, y compris les enfants de John Ball, et la soirée s'est déroulée dans une atmosphère amicale et chaleureuse, ce qui a été souligné par plusieurs de nos invités. Marc-André Varin, du Palais des Congrès de Montréal, a rappelé l'intérêt de Montréal à organiser le CIM 2014. Nous tenons à remercier nos partenaires, le CRM,

l'Institut Fields, le PIMS et MITACS qui ont contribué avec nous au financement et à l'organisation de l'événement. Nous sommes reconnaissants à Luis Seco de l'énergie qu'il a mis pour inviter de hauts dignitaires espagnols à notre réception. Tous ceux qui étaient présents ont apprécié la beauté de l'Hôtel Ritz et je tiens à remercier Gertrud Jeewanjee qui s'est chargée de faire les démarches pour trouver une salle, organiser la réception et faire envoyer les invitations par l'Ambassade. Nous tenons également à remercier Stuart Savage et le personnel de l'Ambassade du Canada pour leur aide dans l'organisation et la tenue de l'événement.

Ceux d'entre nous qui ont assisté au CIM ont été très impressionnés par

le soutien de l'Espagne aux sciences mathématiques. Le roi a présidé la cérémonie d'ouverture du congrès et remis les prix de l'UMI. Des ministres ont fait des discours et le congrès a eu une très large couverture dans la presse espagnole. Nous aimerions pouvoir en faire autant au Canada!

Christiane Rousseau, CMS, François Lalonde, CRM, Nassif Ghoussoub, BIRS, Junko Itô, daughter of Kiyoshi Itô, Gauss Prize Winner, Jon Kleinberg, Nevanlinna Prize Winner, Andrei Okounkov, Fields Medalist, Wendelin Werner, Fields Medalist

BACK HOME FROM SPAIN

Christiane Rousseau
Université de Montréal

The International Congress of Mathematicians (ICM 2006) took place in August, preceded by the General Assembly of the International Mathematical Union (IMU).

The IMU General Assembly was held in Santiago de Compostelle on August 19-20. The Canadian delegation consisted of Donald Dawson, Nassif Ghoussoub, Richard Kane, Barbara Keyfitz (substituting for Jonathan Borwein on three days' notice), and myself. We are pleased to say that Bernard Hodgson was re-elected General Secretary of the International Commission of Mathematics Instruction (ICMI). On the other hand, we once again failed in our bid to have a Canadian elected to the IMU executive. We learned during the General Assembly that Donald Dawson had been on the jury for the Fields Medals. We were also surprised to learn that mathematicians had been able to send proposals for plenary speak-

ers to the president of the ICM Scientific Committee, whereas according to direct information from the IMU Executive, there should not have been any calls for proposals. This is something we will monitor very closely for the next ICM. Over the past four years, the IMU has stepped up its involvement in developing countries. The budget of the Commission on Development and Exchange (CDE) has increased substantially, thanks to more IMU funding and increased contributions from learned societies and the Abel Fund. Sharon Laurenti was hired part-time by the IMU to manage the programs of the CDE and the Developing Countries Strategy Group (DCSG) at ICTP in Trieste. These two organizations have now merged to form the new Commission for Developing Countries (CDC), with a mission to identify needs and support initiatives. These new developments mean that new sources of funding are needed. The con-

tributions of IMU member countries will rise by 5% a year over the next four years. The General Assembly passed a motion recommending that the IMU Executive develop ideas for a stable administrative structure and alternative funding models (possibly to include levies to support IMU activities) and report back to the General Assembly with a concrete proposal in 2010. Other highlights of the General Assembly included the discussion of links between the IMU and the International Commission of Mathematics Instruction (ICMI); this followed the proposal to have the ICMI Executive elected by the ICMI General Assembly rather than the IMU General Assembly, as is presently the case. We gained a new appreciation of the mature nature of cooperation between the Canadian mathematician and teaching communities on mathematics teaching. We should also mention that the General Assembly singled out for commendation

the work of the Committee on Electronic Information and Communication (CEIC) chaired by Jonathan Borwein. The committee's mandate and Jonathan's term as its chair were renewed for another two years.

As the International Congress of Mathematicians opened, it was clear that the announcement of the IMU prizes had grabbed the attention of the international community, given previous reports that Grigori Perelman had refused the Fields Medal awarded by the Fields Committee. Inside the meeting, however, the opening ceremonies and the congress itself were in sharp contrast to the media reporting. We

Stuart Savage, Minister Counsellor, Canadian Embassy in Madrid

are scientists, after all. As the recipients of the four Fields Medals, the Nevanlinna Prize and the new Gauss Prize were presented, the focus remained squarely on their scientific achievements. In announcing the Fields Medal recipients, President John Ball said simply, when he reached Grigori Perelman's award, that "Grigori Perelman has declined the Fields Medal." In the presentations of prize recipients' work, Perelman's accomplishments were given the same coverage as the other recipients, and a special lecture by John Morgan entitled "A report on the Poincaré conjecture" surveyed Perelman's work. I applaud this restrained and respectful approach to excellent science, standing in marked contrast to the sensationalist coverage in the press.

Guillermo Curbera was in charge of cultural activities, which included an extremely well documented display on the history of the ICMs

Our community held a reception on the evening of August 23 at the Ritz Hotel. One of the purposes of the event was to honour prize winners, and we were glad to have in attendance Fields Medalists Andrei Okounkov and Wendelin Werner, Jon Kleinberg, winner of the Nevanlinna Prize, as well as Junko Itô, daughter of Kiyoshi Itô, recipient of the new Gauss Prize. We had the opportunity to congratulate our colleagues who had presented at the ICM, and we were also able to thank our Spanish colleagues for organizing an event of this magnitude, including Manuel de León, president of the local organizing committee, and Guillermo Curbera, author of the ICM history. The IMU's Linda Geraci had brought along a Fields Medal for attendees to examine. Stuart Savage, Adviser to the Minister at the Canadian Embassy in Madrid, acted as master of ceremonies. He highlighted the importance that Canada attaches to science and noted the numerous scientific partnerships that exist between Spain and Canada. Mrs. Mercedes Cabrera Calvo-Sotelo, Spanish Minister of Education and Science, also honoured us with her presence. The event was very well attended, and the guests included John Ball's children. The entire evening was

**Sir John M. Ball
President IMU**

Wendelin Werner, Fields Medalist, Barbara Keyfitz, Fields Institute, Jon Kleinberg, Nevanlinna Prize Winner, Andrei Okounkov, Fields Medalist

marked by a warm and friendly atmosphere, something mentioned by several guests. Marc-André Varin, of Montreal's Palais des Congrès, noted once again Montreal's interest in hosting the 2014 ICM. We would like to take this opportunity to thank our partners, the CRM, the Fields Institute, the PIMS and MITACS, all of whom helped us financially with the event. We would also like to acknowledge Luis Seco for his efforts to invite high-ranking Spanish dignitaries to our reception. All those in attendance were struck by the beauty of the Ritz Hotel, and I would like to thank Gertrud Jeewanjee, who undertook the tasks of finding a room, organizing the reception and sending invitations through the embassy. We would also like to thank Stuart Savage and the other staff of the Canadian Embassy for their help in organizing and running this event.

All those who attended the ICM were very impressed by the support Spain provides to the mathematical sciences. The King presided over the Congress's opening ceremonies and handed out the IMU prizes. Ministers addressed the meeting and the Congress received wide coverage in the Spanish press. Hopefully Canada can do as well!

CALL FOR NOMINATIONS - 2007 DOCTORAL PRIZE
APPEL DE MISES EN CANDIDATURE - PRIX DE DOCTORAT 2007

La SMC a créé ce Prix de doctorat pour récompenser le travail exceptionnel d'un étudiant au doctorat. Le prix sera décerné à une personne qui aura reçu son diplôme de troisième cycle d'une université canadienne l'année précédente (entre le 1er janvier et le 31 décembre) et dont les résultats pour l'ensemble des études supérieures seront jugés les meilleurs. La dissertation constituera le principal critère de sélection (impact des résultats, créativité, qualité de l'exposition, etc.), mais ne sera pas le seul aspect évalué. On tiendra également compte des publications de l'étudiant, de son engagement dans la vie étudiante et de ses autres réalisations.

Les mises en candidature qui ne seront pas choisies dans leur première compétition seront considérées pour une année additionelle (sans possibilité de mise à jour du dossier), et seront révisées par le comité de sélection du Prix de doctorat l'an prochain.

Le lauréat du Prix de doctorat de la SMC aura droit à une bourse de 500 $. De plus, la SMC lui offrira l'adhésion gratuite à la Société pendant deux ans et lui remettra un certificat encadré et une subvention pour frais de déplacements lui permettant d'assister à la réunion de la SMC où il recevra son prix et présentera une conférence.

Candidatures

Les candidats doivent être nommés par leur université; la personne qui propose un candidat doit se charger de regrouper les documents décrits aux paragraphes suivants et de faire parvenir la candidature à l'adresse ci-dessous. Aucune université ne peut nommer plus d'un candidat. Les candidatures doivent parvenir à la SMC au plus tard le **31 janvier 2007**.

Le dossier sera constitué des documents suivants :

* Un curriculum vitae rédigé par l'étudiant.
* Un résumé du travail du candidat d'au plus dix pages, rédigé par l'étudiant, où celui-ci décrira brièvement sa thèse et en expliquera l'importance, et énumérera toutes ses autres réalisations pendant ses études de doctorat.
* Trois lettres de recommandation, dont une du directeur de thèse et une d'un examinateur de l'extérieur (une copie de son rapport serait aussi acceptable). Le comité n'acceptera pas plus de trois lettres de recommandation.

The CMS Doctoral Prize recognizes outstanding performance by a doctoral student. The prize is awarded to the person who received a Ph.D. from a Canadian university in the preceding year (January 1st to December 31st) and whose overall performance in graduate school is judged to be the most outstanding. Although the dissertation will be the most important criterion (the impact of the results, the creativity of the work, the quality of exposition, etc.) it will not be the only one. Other publications, activities in support of students and other accomplishments will also be considered.

Nominations that were not successful in the first competition, will be kept active for a further year (with no possibility of updating the file) and will be considered by the Doctoral Prize Selection Committee in the following year's competition.

The CMS Doctoral Prize will consist of an award of $500, a two-year complimentary membership in the CMS, a framed Doctoral Prize certificate and a stipend for travel expenses to attend the CMS meeting to receive the award and present a plenary lecture.

Nominations

Candidates must be nominated by their university and the nominator is responsible for preparing the documentation described below, and submitting the nomination to the address below. No university may nominate more than one candidate and the deadline for the receipt of nominations is **January 31, 2007**.

The documentation shall consist of:

* A curriculum vitae prepared by the student.
* A resumé of the student's work written by the student and which must not exceed ten pages. The resumé should include a brief description of the thesis and why it is important, as well as of any other contributions made by the student while a doctoral student.
* Three letters of recommendation of which one should be from the thesis advisor and one from an external reviewer. A copy of the external examiner's report may be substituted for the latter. More than three letters of recommendation are not accepted.

Président du Comité de sélection du Prix de doctorat
Chair, Doctoral Prize Selection Committee
Société mathématique du Canada / Canadian Mathematical Society
577 King Edward
Ottawa, Ontario Canada K1N 6N5

CMS-MITACS Joint Conference 2007 / Congrès conjoint MITACS-SMC 2007

May 31 – June 3 / 31 mai à 3 juin Delta Hotel, Winnipeg, Manitoba

PRIZES / PRIX
CMS Jeffery-Williams Prize
Prix Jeffery-Williams de la SMC
Nassif Ghoussoub (UBC)

CMS Krieger-Nelson Prize
Prix Krieger Nelson de la SMC
Pauline van den Driessche (Victoria)

CMS Excellence in Teaching Award
Prix d'excellence en enseignement de la SMC
to be announced / à venir

PLENARY LECTURERS / CONFÉRENCIERS PLENIERS
John Baldwyn (Illinois - Chicago)

Kristin Bennett (Rensselaer Polytechnic Institute)

Andrea Bertozzi (California – Los Angeles)

Bela Bollobas (Cambridge)

Richard Kenyon (UBC)

Michael Nielsen (Queensland)

Charles Read (Leeds)

Arnold Rosenberg, Massachusetts–Amherst)

SESSIONS

Algebraic Varieties with Group Actions
Variétés algébriques avec actions de groupes
Org: Jaydeep Chipalkatti (Manitoba)

Banach Algebras and Abstract Harmonic Analysis
Algèbre de Banach et analyse harmonique abstraite
Org: Yong Zhang (Manitoba)

Complex Function Theory
Théorie des fonctions complexes
Org: Ian Graham (Toronto),
Eric Schippers (Manitoba)

Computer Algebra and Computer Algebra Systems
L'algèbre computationnelle et systèmes d'algèbre computationnelle
Org: Michael Monagan (SFU)

Finite Combinatorics
Combinatoire finie
Org: Robert Craigen (Manitoba),
David Gunderson (Manitoba)

Mathematical Algorithms for Medical Imaging
Algorithmes mathématiques pour l'imagerie médicale
Org: Sima Noghanian (Manitoba)

Mathematical Biology
Biologie mathématique
Org: Gerda de Vries (Alberta),
Frithjof Lutscher (Ottawa)

Mathematical / Computational Finance
Finance mathématique et computationelle
Org: Ruppa K. Thulasiram (Manitoba)

Mathematical Immunology
Mathématiques en Immunologie
Org: Beni M. Sahai (Cadham Provincial Laboratory)

Mathematical Physics
Physique mathématique
Org: Richard Froese (UBC), Tom Osborn (Manitoba)

Mathematics Education
L'éducation mathématique
Org: Abba Gumel (Manitoba), Randall Pyke (SFU)

Model Theory and its Applications
Théorie des modèles et ses applications
Org: Bradd Hart (McMaster), Thomas Kucera (Manitoba), Rahim Moosa (Waterloo)

Network Algorithms
Algorithmes des réseaux
Org: Evangelos Kranakis (Carleton)

Nonlinear Methods in Computational Mathematics
Méthodes nonlinéaires en mathématiques computationnelles
Org: Kirill Kopotun (Manitoba)

Quantum Information Theory
Théorie de l'information quantique
Org: Richard Cleve (Waterloo)

Representations of finite and algebraic groups
Représentations des groupes finis et des groupes algébriques
Org: Gerald Cliff (Alberta), Anna Stokke (Winnipeg)

Resource Allocation Optimization
Optimisation d'allocation de ressources
Org: Binay Bhattacharya (SFU)

Statistical Learning
Apprentissage statistique
Org: Yoshua Bengio (Montreal)

Contributed Papers
Communications libres
Org: Ross Stokke (Winnipeg)

Scientific Directors / Directeurs du Congrès
Don Dawson (Carleton)
Fereidoun Ghahramani (Manitoba)

Local Arrangements / Logistique locale:
Abba Gumel (Manitoba)

CELEBRATING RICHARD GUY'S 90TH BIRTHDAY   Dr. Robert Woodrow *(Calgary)*

Friday, October 15, 2006, faculty and friends gathered at the University Club of the University of Calgary for a celebration of birthdays - the 40th Anniversary for the University of Calgary, the 90th year of Richard K. Guy and the birth of the Richard K. and Louise Guy Visiting Speaker series in the Department of Mathematics and Statistics.

The first lecture in the series was given by Elwyn Berlekamp, The University of California, Berkeley, a long-time friend and co-author of Richard's. Louise expressed the family's view that providing for a continuing stream of distinguished visiting speakers for the department that has been Richard's home for nearly 40 years, 24 of which he's been very actively retired, was a most fitting 90th birthday present.

The celebration also provided the opportunity to the Society to honour Richard on the occasion of his 90th birthday, for his many contributions to mathematics in Canada and on the international scene with a plaque and letter from Dr. Tom Salisbury, the President of the CMS. Robert Woodrow

is shown presenting the plaque and letter to Dr. Guy.

An excerpt from Dr. Salisbury's letter to Richard Guy:

A truly remarkable number of Canadian mathematicians - both students and colleagues - have been touched by your humour, your kindness, and your work. The fact that games and problems are such *a significant part of the mathematical landscape in this country is something we have largely to thank you for. Problems which are easy to state (but deceptively hard to solve) have captivated students for years, and have drawn many into further study of mathematics. So not only has your work enriched us directly, but it has helped build our community.*

EMPLOYMENT OPPORTUNITY:

McMaster University: Canada Research Chair Post-Doctoral Fellowship In Mathematics

Applications are invited for the Canada Research Chair Postdoctoral Fellowship in the Department of Mathematics and Statistics at McMaster University. This fellowship provides opportunities to spend up to three years engaged in research, with a limited amount of teaching, and is particularly suitable for talented mathematicians who have recently completed the Ph.D To learn more about the department, please visit our web page.

The Fellowship is open to candidates of any nationality and selection will be based upon the candidate's research potential. Fellowship holders will work under the supervision of Dr. Walter Craig, a holder of a Canada Research Chair in Mathematics at McMaster University. Research areas of particular interest include Analysis, Partial Differential Equations, Hamiltonian Dynamical Systems and Applied Mathematics. The fellowship normally starts July 1, 2007 and the annual stipend is $42,000 plus a $5,000 grant for research expenses.

Candidates are required to apply for these fellowships by using the MathJobs website by **January 3, 2007**. See our application at
`www.mathjobs.org`

Applicants should provide at least three letters of recommendation. At least one of these letters should report on the candidate's teaching abilities. Preferably these letters will be submitted through the MathJobs website (see above); they may also be sent directly to either:

<table>
<tr><td>Dr. Bradd Hart</td><td>Dr. W. Craig</td></tr>
<tr><td>Chair</td><td>c/o CRC Postdoctoral Fellowship Applications</td></tr>
<tr><td>c/o CRC Postdoctoral Fellowship Applications</td><td>Mathematics & Statistics</td></tr>
<tr><td>Mathematics & Statistics</td><td>McMaster University</td></tr>
<tr><td>McMaster University</td><td>Hamilton, ON L8S 4K1</td></tr>
<tr><td>Hamilton, ON L8S 4K1</td><td>CANADA</td></tr>
<tr><td>CANADA</td><td></td></tr>
</table>

OR

We appreciate all replies to this advertisement, but applications will not be acknowledged. McMaster is committed to Employment Equity and encourages applications from all qualified candidates, including aboriginal peoples, persons with disabilities, members of visible minorities and women.

CANADIAN MATHEMATICAL SOCIETY / SOCIÉTÉ MATHÉMATIQUE DU CANADA
Bonavista Room, Westin Hotel, Calgary, Alberta. June 4, 2006

The meeting opened at 12:43 p.m. and 35 members were in attendance.

1. Adoption of the agenda.

The agenda was accepted as circulated.

2. Minutes of the previous meeting.

G–06–1 MOTION (Wright/Woodrow)

That the minutes of the previous Annual General Meeting, held on June 4, 2005 be accepted.

Carried Unanimously

3. Matters Arising.

There were no matters arising which would not be covered in the Committee Reports and under Other Business.

4. President's Report.

Eddy Campbell reported that there will be a joint Canada-Mexico meeting in September. The summer 2007 meeting is a joint meeting with MITACS. In 2008 the Canada-France meeting will likely occur in Montréal. The AMS is having a regional meeting in Vancouver in 2008 and there is discussion of having the CMS participate.

The CMS has entered into an agreement with Queen's Advancement External Services to develop a fundraising arm of the CMS. In March, Mark Bowman was hired as the CMS Development Coordinator. Already there have been some new funding commitments from Sun Life, and the Imperial Oil Foundation. Other fundraising initiatives were summarized. A *CMS Case for Support* document has been developed to assist CMS fundraising efforts. It highlights the importance of mathematics and explains why supporting the CMS helps mathematics to flourish in Canada.

The projected deficit for fiscal year 2005 was reduced from the expected $80,000 to $13,000, in part due to various cost savings, and a $14,000 surplus is projected for fiscal year 2006. Fundraising is helping to restore financial balance without cutting back on CMS activities.

Campbell reported on the case of a new CRC Tier II professor at UBC who was facing possible denial of immigration on health grounds. The CMS has joined others in intervening on his behalf.

The International Congress of Mathematicians will take place in Madrid in August, and the CMS has contributed funds to assist young mathematicians from developing countries to attend. The CMS will be co-hosting a reception at the congress to help prepare for Canada's bid to hold ICM'2014 in Canada.

The CMS is formulating a response to a boycott of Israeli academics which has been advocated by the National Association of Teachers of Further and Higher Education in the UK. Last year the Board passed a motion indicating, in part, that the academic freedom of individuals should not be sacrificed to political ends.

5. Treasurer's Report.

Campbell acknowledged Arthur Sherk for his 13 years of service as CMS Treasurer.

Sherk presented the 2005 Audited Statement and the Treasurer's Report. He was pleased to report that the serious deficits of recent years appear to have been corrected, and a small surplus is expected for fiscal year 2006. There has been a shift away from reliance on foreign exchange income from sales of journals outside Canada. The investment portfolio returns have been reasonable, and the Finance Committee has decided to maintain the current investment mix. Measures to institute true Endowed Funds are being completed.

He remarked that he was stepping down as Treasurer after 13 years, effective June 30, 2006, and that David Rodgers would be taking over. He thanked the Executive and the staff in Ottawa.

5.1. Audited Statement.

G–06–2 MOTION (Board of Directors)

That the Audited Statement for the period ending December 31, 2005 be accepted.

Carried Unanimously

5.2. Treasurer's Financial Report.

G–06–3 MOTION (Board of Directors)

That the Treasurer's Report for the period ending December 31, 2005 be accepted.

Carried Unanimously

5.3. Appointment of auditors.

G–06–4 MOTION (Board of Directors)

That the firm of Raymond Chabot Grant Thornton be reappointed as auditors of the Canadian Mathematical Society for the period ending December 31, 2006.

Carried Unanimously

6. Executive Director and Secretary's Report.

Wright noted that the new fundraising plan, spearheaded by Eddy Campbell, should have a significant impact on the Society's finances and also help to establish excellent partnerships with the private and public sector going forward. Mark Bowman has begun work as the full-time CMS Development Coordinator.

The CMS will be negotiating an extension to the current three year contract to perform the office functions of the Statistical Society of Canada.

The University of Toronto Press will be selling its offset printing division, and the CMS will be investigating future arrangements for the printing and distribution of its journals.

Wright summarized the locations of upcoming CMS meetings.

He expressed his appreciation to Arthur Sherk for his 13 years of dedicated work as Treasurer, and thanked Eddy Campbell for his leadership, counsel, and support throughout his term as President. George Bluman was acknowledged for his work as Chair of the Mathematical Competitions Committee.

7. 2005 Annual Report to the Members.

Law requires that the Society produce and approve an Annual Report to Members. This documents plays an important role in explaining the operations of the Society to potential donors.

G–06–5 MOTION (Board of Directors)

That the 2005 Annual Report to the Members be accepted.

> *Carried Unanimously*

8. Reports from Committees.

Advancement of Mathematics Committee: Campbell explained that the CMS has $1.7 million of invested assets. Most of this was accumulated from surpluses in the CMS Operations Fund. Some of the monies are reserved for specific purposes. An invested surplus of $170,000 from the 1995 International Mathematical Olympiad continues to generate revenue to support Canada's involvement in the IMO. The David Borwein Distinguished Career Award is funded through the investment of $50,000 donated for this purpose. Of the remaining funds, $400,000 has been placed into a clearly separated Endowment Fund and the rest into a Contingency Fund.

It is expected that the Endowment Fund will provide annual support of at least $20,000 for the Endowment Grants Competition.

An Invested Funds Committee is being struck to administer the handling of the investments.

Education: Harley Weston reported that the Terms of Reference for the Adrien Pouliot Award and the Teaching Award have been changed to encourage the recipients of these awards to give talks at the CMS meetings where the award is presented. Kathy Heinrich and Frédéric Gourdeau have given excellent talks. The CMS has awarded three prizes for math-related projects at the Canada-Wide Science Fair, and these projects will be highlighted in the CMS Notes.

Electronic Services: David Rodgers reported that the Board has approved a motion to enter into an agreement to make available on-line the pre-1997 CJM and CMB back-files at no cost to the Society. Ongoing work is being done to automate work-flow in the Executive Office. A web-site redesign is underway and the Books page now uses the new design.

Endowment Grants: Karl Dilcher commented that nine applications for Endowment Grants were received in the 2005 competition, of which four were funded, receiving a total of $10,000. Although this amount is smaller than previous years, due to budgetary constraints, it at least provided continuity. The 2006 competition will have $15,000 available to fund various projects. All past endowment grant projects are detailed on the CMS web-site.

Finance: Campbell reported briefly on the work of the Finance Committee.

International Affairs: Campbell reported on behalf of Committee chair Christiane Rousseau. The International Affairs Committee represents the Canadian mathematical community to the International Mathematical Union (IMU). Representatives have been selected to attend the 2006 International Congress of Mathematicians (ICM) in Madrid. It would be desirable to have a Canadian member on the IMU Executive. The National Research Council funds the cost of only one delegate to attend the ICM. Jon Borwein pointed out that this is problematic and that a long-term funding model should be developed.

Mathematical Competitions: George Bluman reported on the competitions and training programs with which the Committee and its sub-committees are involved. The training for this year's International Mathematical Olympiad will take place at Dalhousie University. Edward Barbeau continues to run the Mathematical Olympiads Correspondence Program. This year's National Math Camp for students with the potential to compete at the olympiad level will be held at John Abbott College in Montréal.

The Canadian Open Mathematics Challenge, which is run in cooperation with the Centre for Education in Mathematics and Computing at the University of Waterloo, has grown to involve 6,300 students. Bluman reported that *Olympiad Circles* have been started in at least five Canadian cities to train students on olympiad-level problems. These circles may provide one mechanism to obtain greater regional diversity on Canadian olympiad teams.

Bluman thanked Edward Barbeau, Bill Sands and Graham Wright for their ongoing contributions to mathematics competitions.

Nominating: Campbell, on behalf of Edgar Goodaire, underlined the importance of finding willing and responsible members to serve on CMS committees. Members are encouraged to volunteer and to identify colleagues, especially younger ones, to nominate.

Publications: Juris Steprans reported on recent and upcoming changes of editors for the various CMS publications. The Canadian Mathematical Bulletin is now being edited by Jianhong Wu and Nantel Bergeron at York University. It is important to strive for balance among the mathematical disciplines represented by the CJM/CMB associate editors through strong nominations in under-represented areas.

The G. de B. Robinson Prize recipient has been selected and will be made public shortly. Jon Borwein commented that two books in the new CMS Treatises in Mathematics series are expected to be out around year end.

Research: On behalf of Rick Jardine, Campbell stressed the importance of nominating outstanding colleagues for the various prizes of the Society.

Student: Joy Abramson stated that the Canadian Undergraduate Mathematics Conference will take place at McGill University in July. The *Student Mathematical Communicator* newsletter comes out twice a year. Email distribution lists reaching graduate and undergraduate students are available for use. The next 50 students to join the CMS will receive a complementary book, thanks to the generous support of AK Peters.

Tom Salisbury remarked on the excellence of the Math in Moscow program and noted that outstanding students should be encouraged to apply.

Women in Mathematics: Campbell, on behalf of Gerda de Vries, mentioned that the Committee will be holding a workshop in connection with the CMS Winter Meeting in Toronto in December. Such workshops typically involve around 30 participants, most of whom are graduate students.

9. Other Business.

Campbell thanked Claude Laflamme and Tony Ware for their work in organizing this meeting. He also thanked the University of Calgary and other organizations which have supported the meeting.

Jim Totten pointed out that NSERC will now permit grant recipients to use their grants to pay for CMS membership.

Campbell thanked the Executive, the Board and the CMS office for their support during his tenure as President.

10. Adjournment.

The meeting adjourned at 1:58 p.m.

DRAFT PENDING APPROVAL

CALL FOR NOMINATIONS
2008 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 **March 31, 2007.**

APPEL DE MISES EN CANDIDATURE
Prix David-Borwein de mathématicien
émérite pour l'ensemble d'une carrière 2008

. . . .

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 **31 mars 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

AWARDS AT THE CANADA WIDE SCIENCE FAIR 2006

DANIEL BEZDEK

(CMS – INTERMEDIATE AWARD)

**Father Lacombe School
High School, Calgary, AB**

SET A LIGHT TRAP - THE PENROSE PUZZLE

Project Description

I propose a new approach to the unsolved Penrose problem by introducing the new concept of black holes and stars. Also, I propose studying the fundamental problem of billiards in a spherical plane and solve it for the first natural case. Finally, I study the Poincare question about geodesics on the surface of convex higher order deltahedra. This leads me to a new protein folding model.

Awards at the Canada Wide Science Fair 2006:

- EnCana Platinum Award - Best Intermediate Project (Intermediate)
- Gold Medal - Physical & Mathematical Sciences (Intermediate)
- Canadian Mathematical Society Award (Intermediate)
- The University of Western Ontario Scholarship (Intermediate)

Daniel was born on February 11, 1990 in Budapest, Hungary and moved to Canada (Calgary) in the summer of 2003. Besides biology, chemistry, mathematics, and physics he loves reading, drawing and always seems to find some time for soccer as well as basketball.

MATE BEZDEK

(CMS – JUNIOR AWARD)

St. Brigid School, Calgary, AB

X-RAYING AND GEOMETRY

Project Description

My project deals with the mathematics of X-raying. More exactly, it belongs to the important and fast-developing area called geometric X-raying. The concept of the X-ray number (Xn) was introduced by P. Soltan in 1972. My work is centered on this notion, and introduces new concepts like the circular X-ray number, the X-raying parameter (Xp) and proves new theorems on them.

Awards at the Canada Wide Science Fair 2006:

- Silver Medal - Physical & Mathematical Sciences (Junior)
- Canadian Mathematical Society Award (Junior)
- The University of Western Ontario Scholarship (Junior)

Mate was born on November 4, 1991 in Budapest, Hungary and moved to Canada (Calgary) in the summer of 2003. He loves problem solving in science (including of course, mathematics) and piano playing as well as a great variety of sports, in particular basketball and volleyball.

NANCY NGUYEN

(CMS – SENOIR AWARD)

Vancouver Technical Secondary, Vancouver, BC

ELEMENTARY PROOF FOR BLUNDON'S INEQUALITY

Project Description

The project gives an originally elementary proof to Blundon's inequality, which is also known as the Fundamental Triangle Inequality. By using simple geometric propositions and basic calculus, the proof provides an alternate way to Blundon's inequality, which would otherwise require advanced mathematics to do so.

Awards at the Canada Wide Science Fair 2006:

- Canadian Mathematical Society Award (Senior)
- Silver Medal - Physical & Mathematical Sciences (Senior)
- University of British Columbia Science Entrance Award (Senior)
- The University of Western Ontario Scholarship (Senior)

Nancy was a senior at Vancouver Technical Secondary School in Vancouver when she won this award. She is now a mathematics major at the University of British Columbia. She says "I hope I will have more opportunities to study my favourite subject with those who have the same interest with me. I believe UBC will give me an interesting environment while I study there."

OBITUARY: ALFRED LEHMAN *(UNIVERSITY OF TORONTO)*

Council of the Faculty of Arts and Science, University of Toronto

Alfred B. Lehman received his Ph.D. in 1954 from the University of Florida. After working at Tulane, MIT, the Case Institute, Wisconsin, Rensselaer, and the Walter Reed Institute, he came to the University of Toronto in 1965. He was jointly appointed as Professor in the Departments of Mathematics and Computer Science.

Professor Lehman's area of expertise was discrete and combinatorial mathematics, specifically network and graph theory, integer optimization, matroids and lattices, all of which are subjects of major interest to both Computer Science and Mathematics. Continuing health problems caused him to take disability leave in his latter years, and limited his publication output and his ability to supervise students; however, it is the quality of his work that ensures his research will continue to be remembered as highly significant. Referee reports on his papers described his work as being "deep" and "brilliant". In 1991 he received the prestigious Delbert Ray Fulkerson Prize, jointly awarded by the American Mathematical Society and the Mathematical Programming Society, for solving, in great generality, an open problem in combinatorial algorithms that had long resisted solution.

Professor Lehman did not allow his health difficulties to limit his active mind. Even after ceasing to teach, he was a faithful participant and contributor to seminars in both departments. He was a gentle, modest man. At his memorial there was a moving tribute from the leader of this city's amateur radio club, who revealed that for many years Lehman had been a teacher and mentor to generations of amateurs who wished to participate and contribute to the valuable public services that these radio clubs still provide. Until then, even Lehman's closest colleagues had not known of this involvement.

Professor Lehman passed away on May 8th, 2006 in his 75th year. He is survived by his wife, June Mines, a brother-in-law, and nephews and cousins in Florida and Pennsylvania, several of whom spoke lovingly at his memorial service.

SOLUTION FOR NOVEMBER'S PROBLEM

Bob's ranch is larger by about 3 square meters. This is perhaps most easily proved using the fact that the areas of two zones or caps of a sphere are in proportion to their height, measured parallel to the axis. Note first that the ranches must be located symmetrically on the equator. Let θ_i, $i \in \{A,B\}$, be the latitude of the northern boundary; that is, $\theta_A = 5/r$, $\theta_B = 10/r$. Let also w_i be the length of that northern boundary; $w_A = 20$, $w_B = 10$.

Now, the heights of the zones containing the ranches are given by $2r \sin(\theta_i)$; and the proportion of each zone occupied by the ranch is the proportion of its latitude occupied by its boundary, $w_i/(2\pi r \cos(\theta_i))$. Thus the areas are $w_i \tan(\theta_i)/\pi$. The direction of the inequality follows from the convexity of the tangent function; the amount may be approximated using a Taylor series.

Notes: (1) This puzzle was submitted by Stan Wagon, of Macalester College, who credits it to Lester R. Ford. Dr Wagon says he does not know of any solution that does not use calculus. While the solution presented here comes close - the convexity of the tangent function may certainly be derived geometrically - the result on zone areas seems to be intrinsically one of calculus, or at least of the "protocalculus" developed by Archimedes and others. Can the puzzle be solved using a dissection-based argument, in the style of Euclid?

(2) For more extreme values, the larger size of Bob's ranch is much more obvious. Suppose the dimensions are 19,998 km by $3\frac{1}{7}$ km; Alice's ranch is a narrow strip along the equator, while Bob's covers approximately half the world (and is actually *wider* than Alice's, as well as taller!)

OBITUARY: ANDRÉ ROBERT DABROWSKI *(UNIVERSITY OF OTTAWA)*

by **David McDonald** *(University of Ottawa)* and **Gail Ivanoff** *(University of Ottawa)*

André Robert Dabrowski, Professor of Mathematics and Statistics and Dean of the Faculty of Science at the University of Ottawa, died of cancer on Saturday, October 7, 2006 after calmly saying farewell to family and a few close friends and colleagues.

André was an undergraduate in Mathematics at the University of Ottawa (B.Sc., 1977, M.Sc., 1978) and he has made an enormous contribution to the university since his return as a professor in 1985. In the classroom, Andre's teaching methods were frequently unorthodox and innovative, and his graduate courses were always very popular. Andre was the driving force in the creation of the new collaborative M.Sc. in biostatistics, a joint program with Epidemiology. He supervised 15 M.Sc. and Ph.D. students with considerable expertise and affection. By arranging seminars or trips to conferences, André enhanced his students' academic experience well beyond the textbooks and the research.

Andre's administrative contributions to the University of Ottawa included a term as Director of the Ottawa-Carleton Institute in Mathematics & Statistics and a term as Vice-Dean of the Faculty of Science. As the recently appointed Dean of Science, he had ambitious plans for the faculty but his mandate was unfortunately cut short.

On the national front, André was a past Secretary, Treasurer and Vice-President of the Statistical Society of Ottawa, and served as an Associate Editor of the Canadian Journal of Statistics. In addition, he was partway through his term as the first President of the Probability Section of the SSC (a section established under his leadership).

André had a wide range of research interests. After completing his M.Sc. at the University of Ottawa under the supervision of Chandrakant Deo, he did his Ph.D. with Walter Philipp at the University of Illinois (Ph.D., 1982). His doctoral thesis research concerned weak convergence and limit theorems for dependent random variables, which had applications to the asymptotic distribution of U-statistics and martingales. He continued this line of research in collaborations with Gail Ivanoff, Harold Dehling, Robert Burton and Adam Jakubowski.

He quickly developed an interest in biological problems and made significant contributions to the statistical analysis of records of ion channels found in cellular membranes. His interest extended to taking Cathy Morris's graduate course in biophysics and he dragged his co-author David McDonald along because he thought it would be good for him. He also worked with Lawrence Oppenheimer in treating fetal heart monitoring as an industrial quality control problem. His interests in biology recently evolved to addressing questions in the design and analysis of data arising from microarray experiments on gene expression.

André co-authored several papers with David McDonald on rare event simulation of queueing networks. He also collaborated with Mayer Alvo and Cynthia Bocci on problems in environmental statistics.

All his co-authors will agree that it was a pleasure to work with André. He never gave up. André would always come up with a clever new idea to move a project forward.

To illustrate his ingenuity, let's focus on one example taken from a joint paper with David McDonald in the Journal of the Royal Statistical Society. Imagine an instrument that counts events occurring over time. One wishes to determine the average number of events per unit time, but the instrument has a dead time after each count, so two events arriving close together are miscounted as one. We were asked if one could compensate for the missed events. We were given long digitized records of biological events in which the instrumentation dead time was known. André suggested we make the situation *worse* by artificially increasing the dead time and then calculate the average arrival rate for different dead times. Necessarily, longer dead times produced lower arrival rates and this decrease was approximately linear. We therefore extrapolated backwards to zero dead time.

The method is simple, practical and very clever. It worked very nicely. Maybe it was novel but it doesn't really matter. It was new for André and it solved our problem. That's what André did best. He found clever, simple solutions to problems - mathematical or personal. He was a reasonable, caring person who didn't ask much for himself. He just tried to make things better for those around him.

André leaves a wife (Debbie), a son (Adam) and a daughter (Leah). He was a devoted husband and father; no matter how busy he was with other activities, his family always came first.

We have lost a valued colleague and friend. André will be greatly missed

Les avis d'adhésion ont été postés.
Vous pouvez aussi renouveller au site Web. `ww.cms.math.ca/members.f/`

RENOUVELLEMENT INDIVIDUEL 2007
Période d'adhésion : 1er janvier – 31 décembre 2007
Conditions d'adhésion - `www.smc.math.ca/Docs/conditions.html` (conditions et règles)

RENSEIGNEMENTS SUR LE MEMBRE	* CHAMPS OBLIGATOIRES
*Nom :	
*Adresse :	
*Ville :	*Province/État :
*Pays :	*Code postal/zip :
*Téléphone :	*Télécopieur :
*Courrier électronique :	Page Web :
*Employeur :	*Poste :
*Plus haut diplôme obtenu :	*Année :	*Établissement :

ÉTUDIANT - PRÉUNIVERSITAIRE ☐ BACCALAURÉAT ☐ MAÎTRISE ☐ DOCTORAT ☐

Langue de correspondance ANGLAIS ☐ FRANÇAIS ☐

Ne publiez pas mon nom dans le répertoire des membres : ☐

J'aimerais recevoir les *Notes de la SMC* en format électronique SEULEMENT : ☐
(Tous les membres de la SMC reçoivent les Notes en format papier à moins d'avis contraire et ils ont accès à la version électronique.)

CATÉGORIES D'ADHÉSION   BASÉES SUR LE REVENU D'EMPLOI ANNUEL

	RÉGULIER			MEMBRE À VIE
90 000 $ +	206 $	☐		
DE 70 000 $ À 90 000 $	168 $	☐		
MOINS DE 70 000 $	106 $	☐		COMMUNIQUEZ AVEC LE BUREAU DE LA SMC POUR CONNAÎTRE LES TARIFS ET AUTRES DÉTAILS.
RETRAITÉS	42 $	☐		
ENSEIGNANTS (PRÉUNIVERSITAIRE)	106 $	☐ COMPREND L'ABONNEMENT À CRUX WITH MAYHEM		
ÉTUDIANTS	42 $	☐ COMPREND L'ABONNEMENT À CRUX WITH MAYHEM		

	SOCIÉTÉ RECIPROCITAIRE		MAA		
90 000 $ +	103 $	☐	175 $	☐	TARIFS OFFERTS AUX MEMBRES DE LA MAA OU D'UNE SOCIÉTÉ RÉCIPROCITAIRE RÉSIDANT HORS DU CANADA SEULEMENT.
DE 70 000 $ À 90 000$	84 $	☐	143 $	☐	
MOINS DE 70 000 $	53 $	☐	90 $	☐	
RETRAITÉS	21 $	☐	36 $	☐	VEUILLEZ INDIQUER VOTRE NUMÉRO D'IDENTIFICATION : _____
ENSEIGNANTS (PRÉUNIVERSITAIRE)	53 $	☐	90 $	☐	
ÉTUDIANTS	21 $	☐	36 $	☐	

MODE DE PAIEMENT   POUR UNE ADRESSE À L'ÉTRANGER, PAIEMENT REQUIS EN DEVISES AMÉRICAINES. L'ADRESSE COMPLÈTE DE LA BANQUE ÉMETTRICE DOIT PARAÎTRE SUR LE CHÈQUE. NO° TPS/TVH : 1188 3979 RT

RENOUVELLEMENT AUTOMATIQUE

VOULEZ-VOUS RENOUVELLER AUTOMATIQUEMENT EN 2008? LES RENOUVELLEMENTS SE FERONT EN NOVMBRE 2007 POUR L'ANNÉE 2008

OUI ☐ NON ☐ CARTE DE CRÉDIT ☐	INITIALE(S) : _____
GARANTISSEZ VOTRE TARIF	2008 ☐	2009 ☐

MODE DE PAIEMENT	Carte de crédit : Visa ☐ MasterCard ☐	Chèque : Chèque no° : _____

Carte no°   _____/_____/_____   Expiration _____/_____

Nom figurant sur la carte	
Signature	

2007 CMS MEMBERSHIPS

Membership renewal notices have been mailed.
To renew electronically please visit our website. www.cms.math.ca/members/

2007 *INDIVIDUAL* Membership Application/Renewal Form
Membership period: January 1 to December 31, 2007
See www.cms.math.ca/docs/terms for terms and conditions

MEMBER INFORMATION   * MANDATORY FIELDS (IF AVAILABLE)

*Name:	
*Address:	

*City:	*Province/State:

*Country:	*Postal/zip code:
*Phone:	*Fax:
*Email:	Home Page:
*Employer Name:	*Position:

*Highest degree obtained:	*Year:	*Granting institute:

STUDENT - PRE-UNIVERSITY ☐ UNIVERSITY ☐ MASTERS ☐ DOCTORAL ☐

Language Preference ENGLISH ☐ FRENCH ☐

Do not list my name in the Member's Directory: ☐

I wish to receive the CMS Notes Electronically ONLY: ☐
(please note all CMS Members receive the CMS Notes in paper format unless indicated. All CMS Members have electronic access to the CMS Notes).

MEMBERSHIP RATES   ALL RATES BASED ON PROFESSIONAL ANNUAL INCOME

	REGULAR MEMBER RATE	LIFETIME MEMBER RATE
$90,000 +	$206 ☐	RATES AVAILABLE UPON REQUEST PLEASE CALL THE CMS OFFICE FOR DETAILS
$70,000 TO $90,000	$168 ☐	
$40,000 TO $70,000	$106 ☐	
RETIRED	$ 42 ☐	
PRE-UNIVERSITY TEACHER	$106 ☐ INCLUDES SUBSCRIPTION TO CRUX WITH MAYHEM	
STUDENT	$ 42 ☐ INCLUDES SUBSCRIPTION TO CRUX WITH MAYHEM	

	RECIPROCAL SOCIETY RATE	MAA RATE	
90,000 +	$ 103 ☐	$175 ☐	RECIPROCAL SOCIETY AND MAA RATES ARE APPLICABLE ONLY TO MEMBERS RESIDING OUTSIDE CANADA.
$70,000 TO $90,000	$ 84 ☐	$143 ☐	
$40,000 TO $70,000	$ 53 ☐	$ 90 ☐	
RETIRED	$ 21 ☐	$ 36 ☐	IF MEMBER OF RECIPROCAL SOCIETY OR MAA PLEASE PROVIDE ID#: _____
PRE-UNIVERSITY TEACHER	$ 53 ☐	$ 90 ☐	
STUDENT	$ 21 ☐	$ 36 ☐	

PAYMENT INFORMATION   NON-CANADIAN ADDRESSES PAY IN US FUNDS. CHEQUES DRAWN ON CANADIAN OR US BANK. BANK ADDRESS MUST APPEAR ON CHEQUE.
CHEQUES ARE PAYABLE TO THE CANADIAN MATHEMATICAL SOCIETY — PAYMENT MUST ACCOMPANY FORM GST/HST# 11883 3979 RT

AUTOMATIC RENEWAL

PLEASE INDICATE IF YOU WOULD LIKE TO HAVE AN AUTOMATIC RENEWAL FOR 2008 – (RENEWALS OCCUR IN NOVEMBER 2007 FOR 2008 MEMBERSHIP YEAR)

YES ☐   NO ☐   CREDIT CARD ☐   INITIALS: _____

PAY 2007 RATES NOW AND SAVE!	2008 ☐	2009 ☐

Payment Method	Credit card: Visa ☐ MasterCard ☐	Cheque: Cheque number _____
Credit card number	_____/_____/_____	Expiry _____/_____
Printed name on card		
Signature		

University of Saskatchewan - Department of Mathematics & Statistics

Tenure-track positions in Mathematics & Statistics

The Department of Mathematics & Statistics in the College of Arts and Science at the University of Saskatchewan invites applications for three tenure-track positions at the Assistant Professor level effective July 1, 2007;   one in each of the areas of Analysis, Applied Mathematics and Statistics.

Analysis: The department is seeking candidates who have outstanding records of research and publication in an area of Analysis such as functional analysis, harmonic analysis and complex analysis. Applicants must have a doctoral degree. The successful candidate will demonstrate excellence or promise of excellence in teaching and graduate supervision, and will be expected to develop a vigorous, externally-funded research program.

Applied Mathematics: The department is seeking candidates who have outstanding records of research and publication in an area of mathematical modeling. Applicants must have a doctoral degree. The successful candidate will demonstrate excellence or promise of excellence in teaching and graduate supervision, and will be expected to develop a vigorous, externally-funded research program.

Statistics: The department is seeking candidates who have outstanding records of research in Genetic or Spatial Statistics (including specializations such as genomics, micro-array analysis, genetic epidemiology, pedigree analysis, image analysis, spatial processes, and morphometrics). Applicants must have a doctoral degree in Statistics and demonstrate excellence or promise of excellence in teaching mathematical and applied statistics courses at all levels. Accreditation by a national statistical organization will be considered an asset. The successful candidate will be expected to develop a vigorous, externally-funded research program and to supervise graduate students.

For more information on the Department of Mathematics and Statistics and its research activities, see URL `http://math.usask.ca/`

The College of Arts & Science offers a dynamic combination of programs in the humanities and fine arts, the social sciences and the sciences. There are over 8,000 undergraduate and graduate students in the College and 325 faculty, including 14 Canada Research Chairs. The College emphasizes student and faculty research, interdisciplinary programs, community outreach and international opportunities.

The University of Saskatchewan is located in Saskatoon, Saskatchewan, a city with a diverse and thriving economic base, a vibrant arts community and a full range of leisure opportunities. The University has a reputation for excellence in teaching, research and scholarly activities and offers a full range of undergraduate, graduate, and professional programs to a student population of about 20,000. The university is one of Canada's leading research-intensive universities.

Applicants should send a curriculum vitae and arrange for three confidential letters of reference to be sent to:

Dr. Raj Srinivasan, Head
Department of Mathematics and Statistics
University of Saskatchewan
106 Wiggins Road
Saskatoon, SK S7N 5E6

Email: `math@sask.usask.ca`

Closing date for receipt of applications is January 31, 2007.

All qualified candidates are encouraged to apply; however, Canadian citizens and permanent residents will be given priority. In accordance with the University's Employment Equity Policy, the department welcomes applications from all qualified candidates. Women, people of aboriginal descent, members of visible minorities, and people with disabilities are invited to identify themselves as members of these designated groups on their applications.

NOUVELLES DES DÉPARTEMENTS *(added by NB as trans. of news from..., please review)*

Université de Sherbrooke, Sherbrooke (Québec)

Départs à la retraite : Alain Boulanger (statistique), 1er septembre 2006.

Visiteurs : Sara Derivière (postdoc, Université de Rouen, France, systèmes dynamiques, 05/09 jusqu'à l'été 2007); Bernt Tore Jensen (postdoc, Université de Trondheim, Norvège, algèbre, 05/08 à 06/08); Sonia Trepode (Université Mar Del Plata, Argentine, algèbre, 05/12-06/01 et 06/08-06/09); Diane Castonguay (Université Fédérale de Goias, Brésil, algèbre, janvier 2006); Cristian Novoa (Université Fédérale de Goias, Brésil, algèbre, janvier 2006); Yingbo Zhang (Université normale de Beijing,Chine, algèbre, janvier – mars 2006); Mohammad Jafari Jozani (stagiaire, Shahid Beheshti University, Iran, statistique, septembre 2005 à août 2006); Idir Ouassou (ENSA-Marrakech, Maroc, statistique, avril 2006); Gilles Ducharme (Université Montpellier II, France, statistique, octobre 2006).

EMPLOYMENT OPPORTUNITY:

McMaster University: Post-Doctoral Fellowships In Mathematics and Statistics

Applications are invited for postdoctoral fellowship positions in the Department of Mathematics and Statistics at McMaster University. These fellowships provide an opportunity to spend either two or three years engaged in research, depending on funding and the needs of different research groups, with a limited amount of teaching. These positions are particularly suitable for talented mathematicians who have recently completed the Ph.D. degree. To learn more about the department, please visit our web page.

The fellowships are open to candidates of any nationality and selection will be based upon the candidate's research potential. The fellowship normally starts July 1, 2007 and the annual stipend is $40,000 plus a $2,000 grant for research expenses.

Candidates are required to apply for these fellowships by using the MathJobs website by **January 3, 2007**. See our application at `www.mathjobs.org`

Applicants should provide at least three letters of recommendation. At least one of these letters should report on the candidate's teaching abilities. Preferably these letters will be submitted through the MathJobs website (see above); they may also be sent directly to:

<div style="display:flex">
<div>
Dr. Bradd Hart
Chair
Mathematics & Statistics
McMaster University
Hamilton, ON L8S 4K1
CANADA
</div>
<div>
We appreciate all replies to this advertisement, but applications will not be acknowledged. McMaster is committed to Employment Equity and encourages applications from all qualified candidates, including aboriginal peoples, persons with disabilities, members of visible minorities and women.
</div>
</div>

CALL FOR SITES
DEMANDES DE PROPOSITIONS D'EMPLACEMENTS

Interested in hosting a CMS Meeting?
The summer and winter meeting sites are confirmed to the year 2008. The CMS Research Committee invites requests from departments interested in hosting a CMS Meeting for Summer 2009 onwards. The head of the department should write to the chair.

Êtes-vous intéressés à être l'hôte d'une réunion de la SMC?
Les lieux des réunions d'été et d'hiver sont confirmés jusqu'à l'an 2008. Le Comité de la recherche de la SMC invite les départements intéressés à tenir l'une de ces réunions en été 2009 ou plus tard à soumettre une proposition. Les chefs de département intéressés doivent soumettre leur propositions au président.

Dr. J.F. Jardine, Chair/Président
CMS Research Committee / Comité de recherches de la SMC
Department of Mathematics
The University of Western Ontario
London, Ontario N6A 5B7 Canada

CALENDAR OF EVENTS / CALENDRIER DES ÉVÉNEMENTS

DECEMBER   **2006**   **DÉCEMBRE**

4-8   Finding and Keeping Graduate Students in the Mathematical Sciences (AIM Research Conference Center, Palo Alto, CA) `http://aimath.org/ARCC/workshops/keepingrads.html`

9-11   **CMS Winter 2006 Meeting / Réunion d'hiver 2006 de la SMC Toronto, ON** `www.cms.math.ca/events`, `meetings@cms.math.ca`

11-15   ISAAC Workshop on Pseudo-Differential Operators: PDE & Time Frequency Analysis (Fields Institute, Toronto) `www.fields.utoronto.ca/programs`

13-15   Workshop on "Geometry of vector distributions, differential equations, and variational problems" (International School for Advanced Studies (SISSA), Trieste, Italy) `www.sissa.it/~zelenko/CEIHomepage.html`

16-18   The 5th International Conference on Differential Equations and Dynamical Systems (University of Texas-Pan American, Edinburg,TX) `xzliu@uwaterloo.ca`, `www.watam.org/deda06.html`

JANUARY   **2007**   **JANVIER**

4-7   Joint Mathematics Meetings: AMS, MAA, AWM, etc. `www.ams.math.org`

9-13   Higher Categories and their Applications (Fields Institute, Toronto) `www.fields.utoronto.ca/programs`

18-21   Workshop on Representation Theory of Reductive Algebraic Groups (Fields Institute, Toronto) `www.fields.utoronto.ca/programs`

10-11   International Symposium on Mathematical Programming for Decision Making: Theory and Applications (Indian Statistical Institute, Delhi Centre) `http://www.isid.ac.in/~ismpdm07/`

27   Workshop on "Coherent Sequences" by Stevo Todorcevic, University of Toronto and CNRS, Paris (University of North Carolina at Charlotte, NC) `www.math.toronto.edu/~stevo`

29-Feb 3   Operator Algebras and Topology (Moscow State University, Moscow, Russia) `http://higeom.math.msu.su/oat2007`

MARCH   **2007**   **MARS**

4-8   Twelfth International Conference on Approximation Theory (Menger Hotel, San Antonio, TX) `www.math.vanderbilt.edu/~at07/at07.html`

10-13   Complex Cobordism in Homotopy Theory: its impact and prospects (John Hopkins University, Baltimore, MD) `www.lehigh.edu/~dmd1/JHUconf.html`

19-23   Representation of Surface Groups (AIM Research Conference Center, Palo Alto, CA) `www.aimath.org/ARCC/workshops/surfacegroups.html`

29-31   The Forty-First Spring Topology and Dynamics Conference 2007 (University of Missouri-Rolla, Rolla MO) `http://web.umr.edu/~stdc2007/`

29-Apr 4   International conference on Language and Automata Theory and Applicaitons (LATA 2007) (Tarragona, Spain) `www.grammars.grlmc.com/LATA2007/`

APRIL   **2007**   **AVRIL**

14-15   AMS Regional Meeting (Stevens Institute of Technology, Hoboken, NJ) `www.ams.math.org/meetings/`

21-22   AMS Regional Meeting (University of Arizona, Tucson, AZ) `www.ams.math.org/meetings/`

MAY   **2007**   **MAI**

18-20   The 2007 Midwest Geometry Conference (MGC 2007) (University of Iowa, Iowa City, IA) `www.emis.de/journals/SIGMA/`

20-24   The CAIMS Annual Meeting (Banff Conference Centre)

21-23   Applications of Analysis to Mathematical Biology (Duke University, Durham, NC) `www.math.duke.edu/conference/AAMB07/`

22-26   Extremal problems in complex and real analysis (Peoples Friendship University of Russia, Moscow,Russia) `www.albany.edu/~pb6916/`, `stessin@math.albany.edu`

29-June 1   The Fourth International Conference on Mathematical Biology (Wuyishan City, Fujian, P.R. China) `www.csmb.org.cn/`

30-Jun.2   **CMS-MITACS Joint Conference 2007, Host: University of Manitoba Delta Hotel, Winnipeg, Manitoba** `www.cms.math.ca/events` `meetings@cms.math.ca`

JUNE   **2007**   **JUIN**

18-23   Combinatorics and Optimization 40th Anniversary Conference (University of Waterloo, Waterloo, ON) `www.math.uwaterloo.ca/Cand_Dept/Conference/40thConference.shtml`

24 - Jul.1   45th International Symposium on Functional Equations (Bielsko-Biala, Poland) `romanger@us.edu.pl`, `knikodem@ath.bielsko.pl`

JULY   **2007**   **JUILLET**

2-6   Design Theory of Alex Rosa, a meeting in celebration of Alex Rosa's 70th birthday (Bratislava, Slovakia) `www.dumn.edu/~dfroncek/alex/index.htm`

4-8   International Conference on Nonlinear Operators, Differential Equations and Applications (ICNODEA 2007) (Bolyai University, Cluj-Napoca, Romania) `www.math.ubbcluj.ro/~mserban/confan.html`

10-14   The Twenty-Second IEEE Symposium on Logic in Computer Science (LICS 2007) (Wroclaw, Poland) `phil@site.uottawa.ca`

16-20   6th International Congress on Industrial and Applied Mathematics (Zurich, Switzerland) `www.iciam07.ch`

16-22   The 8th International Conference on Fixed Point Theory and its Applications (Ching Mai Univesity, Thailand) `www.math.science.cmu.ac.th/ICFPTA2007/`

31-Aug 3   First Joint International Meeting between the AMS and the Polish Mathematical Society (Warsaw, Poland) `www.ams.org/amsmtgs/internmtgs.html`

DECEMBER   **2007**   **DÉCEMBRE**

7-11   Fourth Pacific Rim Conference on Mathematics - also celebrating the 10th Anniversary of the Liu Bie Ju (Centre for Mathematical Sciences, City University of Hong Kong) `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`

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`

EMPLOYMENT OPPORTUNITY:

McMaster University: McKay Post-Doctoral Fellowship In Mathematics

Applications are invited for the McKay Post-Doctoral Fellowship in Mathematics, named after Dr. A.C. McKay, a former Dean and Chancellor of McMaster University. These fellowships provide an opportunity to spend up to three years engaged in research, with a limited amount of teaching, and are particularly suitable for talented mathematicians who have recently completed the Ph.D. degree.

The McKay Fellowship is open to candidates of any nationality and selection will be based upon the candidate's research potential. Research areas of particular interest include Harmonic Analysis, Linear and Nonlinear Partial Differential Equations. The fellowship normally starts July 1, 2007 and the annual stipend is $42,000 plus a $5,000 grant for research expenses.

Candidates are required to apply for these fellowships by using the MathJobs website by **January 3, 2007**. See our application at `www.mathjobs.org`

Applicants should provide at least three letters of recommendation. At least one of these letters should report on the candidate's teaching abilities. Preferably these letters will be submitted through the MathJobs website (see above); they may also be sent directly to either:

Dr. Bradd Hart	Dr. E. Sawyer
Chair	McKay Professor of Mathematics
Mathematics & Statistics	Mathematics & Statistics
McMaster University	McMaster University
Hamilton, ON L8S 4K1	Hamilton, ON L8S 4K1
CANADA	CANADA

OR

We appreciate all replies to this advertisement, but applications will not be acknowledged. McMaster is committed to Employment Equity and encourages applications from all qualified candidates, including aboriginal peoples, persons with disabilities, members of visible minorities and women.

Tarifs et horaire 2006 Rates and deadlines

Deadlines for receipt of material are as follows / Les dates limites pour la réception des annonces sont les suivantes

Issue date/ date de parution	Content deadline / Date limite pour contenu
February / février	December 1 / le 1 décembre
March / mars	January 14 / le 14 janvier
April / avril	February 15 / le 15 février
May / mai	March 15 / le 15 mars
September / septembre	July 15 / le 15 juillet
October / octobre	August 15 / le 15 août
November / novembre	September 15 / le 15 septembre
December / décembre	October 14 / le 14 octobre

Net rates / tarifs nets	Institutional Members / Library Membres institutionnels / Bibliothèques	Corporate Members Membres Organisationels	Others/Autres
Full page / page complète	260.00	485.00	645.00
3/4 page	240.00	445.00	595.00
1/2 page	160.00	295.00	395.00
1/4 page	95.00	175.00	235.00
Back cover	325.00	615.00	815.00
Inserts	195.00	375.00	495.00

For more than 4 pages, or for the printing and inserting of camera ready material, please send a sample to the CMS Notes for a quote.
Surcharges apply for prime locations - contact `notes-ads@cms.math.ca` Subscription to the Notes is included with the CMS membership. For non-CMS members, the subscription rate is $60 (CDN) for subscribers with Canadian addresses and $60 (US) for subscribers with non-Canadian addresses.

Pour plus de 4 pages, ou pour l'impression et l'inclusion d'une copie prête à la reproduction, veuillez envoyer un exemple aux Notes de la SMC afin d'obtenir un estimé. Des suppléments sont applicables pour des places de choix - communiquer avec `notes-ads@cms.math.ca`
L'adhesion à la SMC comprend l'abonnement aux Notes de la SMC. Le tarif d'abonnement pour les non-membres est de 60 $ CDN si l'adresse de l'abonné est au Canada et de 60 $ US si l'adresse est à l'étranger.

If undelivered, please return to:
si NON-LIVRÉ, prière de retourner à:
CMS Notes / Notes de la SMC
577 King Edward
Ottawa, Ontario, K1N 6N5, Canada