



CMS NOTES de la SMC

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MESSAGE FROM THE PRESIDENT

Dr. H.E.A. Campbell
Memorial University of Newfoundland

We have finished the year 2004 with a terrific Winter Meeting, hosted by McGill University in Montreal, December 11-13. It was a treat to return to Montreal, where the Canadian Mathematical Congress first met in 1945 with the hope that "the Congress will be the beginning of important mathematical developments in Canada." That has indeed been the case, and our meetings serve to recognize this and to make further contributions.

We had many reasons to celebrate outstanding achievements at this meeting. The CMS Coxeter-James Prize Lecture was given by Isabella Laba (UBC). The CMS Doctoral Prize Lecture was given by Nicolaas Spronk (Waterloo). The CMS Distinguished Service Award went to Edgar Goodaire (Memorial). The CMS G. de B. Robinson Award went to Javad Mashregi (Laval) and Victor Havin (St. Petersburg) for their two papers "Admissible Majorants for Model Subspaces of H^2 , Part I: Slow Winding of the Generating Inner Function" and "Admissible Majorants for Model Subspaces of H^2 , Part II: Fast Winding of the Generating Inner Function" which were published in the Canadian Journal of Mathematics, Volume 55 (2003), no 6. The CMS Adrien Pouliot Prize went to Jean-Marie de Koninck (Laval). We were for-

tunate to have Dr. Pouliot's grandson attend the Banquet to make the award in person on behalf of the family. There were four distinguished plenary speakers: Michael Bennett (UBC), Persi Diaconis (Stanford), Rainer Steinwandt (Karlsruhe), and Rostislav Grigorchuk (Texas A&M). The Public Lecture was delivered by Alexei G. Myasnikov (McGill). Moreover there were 17 symposia including one in the History of Mathematics, one in Education, as well as a Contributed Paper Session. Personally, it was a great pleasure to have David, Bessie and Jonathan Borwein on hand at the banquet to give Arthur Sherk a cheque for \$50,000 towards the creation of the David Borwein Distinguished Career Award.

As well as the feast of mathematics, we enjoyed the organizational skills and outstanding hospitality offered by our hosts in Montreal. Our thanks are due to the Meeting Director Olga Kharlampovich (McGill), the Chair of Local Arrangements William G. Brown (McGill) as well as K. N. (Gowri) GowriSankaran, Chair of the Department of Mathematics and Statistics at McGill. And – as always – the hard work of our staff from the Executive Office.

I remind you all of the 2005 Canadian Mathematics Education Forum that will be held in Toronto, May 6 - 8, 2005. The three co-chairs of the 2005 Forum are Florence Glanfield (Saskatchewan), Bradd Hart (McMaster) and Frédéric Gourdeau (Laval). The Forum

will bring together mathematics educators and administrators from universities and schools across the country. The goal, of course, is to improve the teaching of mathematics in our schools. The overall theme of the 2005 Forum will be "Why Teach Mathematics?" The format of the forum will consist of plenary or key note sessions and working group sessions. Some of the discussion and working group themes that have been identified so far include: approaches to early numeracy and age-appropriate mathematics education; strategies for increasing the number of highly qualified students in mathematically intense programs in science and engineering; mathematics education for students at risk; effective approaches to the education of all mathematics educators; and mathematics education and the aboriginal community. It is the intent that groups working together in this forum will develop projects, initiatives, and statements that will outline ways in which Canadians may address these issues and concerns.

Moreover, many provincial associations of mathematics teachers wish to stay in contact and further develop the links created at the first Forum in 2003. The Advancement of Mathematics Committee has recommended that these Fora be held every three or four years.

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DÉJÀ VU ALL OVER AGAIN?

Several weeks ago, a colleague said that she had heard from a student that the answers to several of her course assignments were on the Web, and could be found rather easily. Within the next fortnight, I had heard the same story several more times, including a letter in the December AMS Notices. In the hopes of

adding something to the discussion, as well as reaching some more readers, we shall look at the same phenomenon here.

The humanities have had a problem for many years now with essays distributed by free or commercial "cheat sites". Services have grown up to combat this, permitting an instructor to compare electronically-submitted essays with material on the Web. For the most part, these sites have not been a major problem to mathematics instructors.

There are also, of course, many essays posted out of honest pride of authorship, the Web serving as a refrigerator door. Quality is, of course, variable. I was once looking (unsuccessfully) for the text of Menelaus' Sphaerica, and came across an essay by a student who believed it to have been written by the same Menelaus who (according to Homer) fought at the siege of Troy!

The problem that is now emerging involves assignment answers posted by instructors for the benefit of their own classes. Especially with innovations such as MathML, it has become easy for the conscientious instructor to provide this welcome service to students using a course website. And why not? By the time the material is posted, the assignment has been submitted. The problem, of course, is that another class, a thousand miles away, may be assigned the same question next week; and in many cases it's the work of a few minutes searching to find the answers.

The implications are serious. True, it has usually been possible to find a theorem in a library book; but the time involved is often great enough, especially for the off-campus student, that sitting down to work out the proof may be easier. Moreover, the anti-cheating software that has helped in other subjects won't help much here - one would expect two correct proofs of the same theorem to resemble each other fairly strongly.

A drastic defensive strategy would be to make heavy use of final and midterm examinations (never, of course, take-home), even in advanced courses. Some instructors already do this; others will find it too high a price to pay. If you have a small class, you may know your students and their work well enough to recognize a change in style - with a large class this is harder. A third approach is just not to make too much use of assignment questions that can be identified easily from a few keywords; but this does put a lot of good material, including most named theorems, out of use.

We should also consider preventative action. Assuming that you want to keep on posting answers (and certainly students appreciate this service), how can you avoid contributing to the problem?

One simple solution is to post a scanned handwritten set of solutions (many find this easier anyhow) which search engines will not find. Another is to password-protect the web page. You can also put a tag such as `<META name="robots" content="none">` in the head of your HTML file. This instructs search engine "robots" not to record the contents; supposedly, standard search engines honor these. There is also another method, the Robots Exclusion Protocol, that your server administrator can use.

Taking down old pages is a good idea, once their legitimate purpose is over. Unfortunately, services such as Google cache web pages and will often make a cached page available to a user after the original has been taken down. Again, though, if any crucial parts of the page have been in the form of images (which are not cached), taking the page down will effectively take it out of use.

Like the pedagogical problems caused by increasingly sophisticated calculators, these problems won't go away. But I am confident that, with a little flexibility on everybody's part, this will turn out to be a minor crisis.

NOTES DE LA SMC

Les Notes de la SMC sont publiés par la Société mathématique du Canada (SMC) huit fois l'an (février, mars, avril, mai, septembre, octobre, novembre et décembre).

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CMS NOTES

The CMS Notes is published by the Canadian Mathematical Society (CMS) eight times a year (February, March, April, May, September, October, November and December).

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ISSN :1193-9273 (imprimé/print)
1496-4295 (électronique/electronic)

DÉJÀ VU, ENCORE UNE FOIS?

Il y a quelques semaines, un étudiant informe une de mes collègues que les solutions des problèmes qu'elle avait donnés comme devoir se trouvaient facilement sur le Web. Dans l'espace d'une journée, j'ai entendu la même histoire venant de plusieurs autres collègues, en plus de lire une lettre à ce sujet dans le numéro de décembre des *AMS Notices*. Dans l'espoir de contribuer à la discussion et de sensibiliser un plus vaste lectorat, je vous propose d'aborder cette épingleuse question ici aussi.

Ce n'est pas d'hier que des sites Internet offrent gratuitement ou vendent des dissertations en sciences humaines. Les professeurs disposent maintenant de logiciels leur permettant de comparer les dissertations qui leur sont présentées à ce que l'on trouve sur le Web. Dans l'ensemble, ces sites n'ont pas causé trop de difficultés dans le domaine des mathématiques. On y trouve bien sûr de nombreux essais publiés uniquement par fierté personnelle, le Web étant à cet égard un beau fourre-tout. Bien sûr, la qualité de ce que l'on y trouve est très variable. Un jour, en cherchant (en vain) le texte de Sphaerica de Ménelaüs, je suis tombé sur la dissertation d'un étudiant qui croyait que ce traité était l'œuvre du même Ménelaüs qui avait (selon Homère) assiégié la ville de Troie!

Le problème auquel on assiste maintenant, c'est la publication sur le Web, par les professeurs, des réponses aux travaux qu'ils ont donnés comme devoir. De nouveaux logiciels comme MathML facilitent en effet la tâche des professeurs consciencieux qui souhaitent offrir à leurs étudiants ce service fort apprécié. Et pourquoi pas, puisque les réponses sont publiées seulement une fois les devoirs rendus? L'ennui, c'est qu'un autre professeur, à des milliers de kilomètres, pourrait très bien donner les mêmes problèmes à résoudre la semaine suivante. Dans bien des cas, il suffit de quelques minutes pour trouver les réponses.

Les conséquences sont grandes. Il est certes possible depuis toujours de trouver un théorème dans un livre à la bibliothèque, mais la recherche est tellement longue, surtout pour un étudiant qui n'habiterait pas sur campus, qu'il est généralement plus facile d'établir la

preuve soi-même. Qui plus est, les logiciels antiplagiat qui ont aidé dans plusieurs disciplines sont pratiquement inutiles ici, car deux preuves correctes d'un même théorème sont naturellement très semblables.

Une stratégie défensive – quoique draconienne – consisterait à donner le plus d'exams possibles en classe (et non à la maison), même dans les cours de niveau avancé. Certains professeurs ont déjà opté pour cette solution, d'autres estiment le prix à payer trop élevé. Il est généralement assez facile de détecter les écarts de style dans un petit groupe, car vous connaissez bien les étudiants et leur travail, mais pas dans un grand. Une autre option serait de ne pas donner comme devoir trop de questions que l'on pourra facilement retrouver à partir de quelques mots clés. Cette option a toutefois pour désavantage d'écartier une grande quantité d'excellentes ressources, entre autres la plupart des théorèmes nommés d'après des personnes.

Pourquoi alors ne pas intensifier les mesures préventives? Comment faire pour fournir les réponses aux étudiants (qui apprécient grandement ce service), sans empirer la situation? Une solution toute simple serait de mettre sur le Web une reproduction numérisée des solutions écrites à la main (ce que bien des gens estiment plus facile à faire de toute façon), que les moteurs de recherche ne trouveront pas, ou encore de protéger la page Web à l'aide d'un mot de passe. Il est aussi possible d'insérer la balise `<META name="robots" content="none">` dans l'en-tête (head) de la page HTML. Cette balise indique aux robots indexeurs de ne pas indexer le contenu de la page; les moteurs de recherche standard respectent généralement cette consigne. Enfin, une autre méthode serait de demander à l'administrateur de votre serveur d'utiliser un protocole spécial : le Robots Exclusion Protocol.

Il est bon de retirer les pages de solutions une fois qu'elles ne sont plus utiles. Toutefois, les moteurs de recherche comme Google conservent ces pages en « cache » et les proposent souvent aux internautes même après que vous les ayez effacées de votre serveur. Là encore, si des parties importantes

de la page sont sous forme d'images (qui ne sont pas conservées en cache), le fait de retirer la page du Web les fera véritablement disparaître.

À l'instar d'autres difficultés pédagogiques causées par l'invention de calculatrices de plus en plus puissantes, ces problèmes ne s'évanouiront pas. J'ai toutefois bon espoir que si nous faisons tous preuve d'un peu de souplesse, le malaise demeurera bénin.

NEW LOOK OF THE CMS NOTES

NOUVEAU DESIGN DES NOTES DE LA SMC

We hope members and readers will enjoy the new look of the CMS Notes.

If you have any comments or suggestions please email them to:
notes@cms.math.ca

Nous esperons que le nouveau design des Notes de la SMC vous plait.

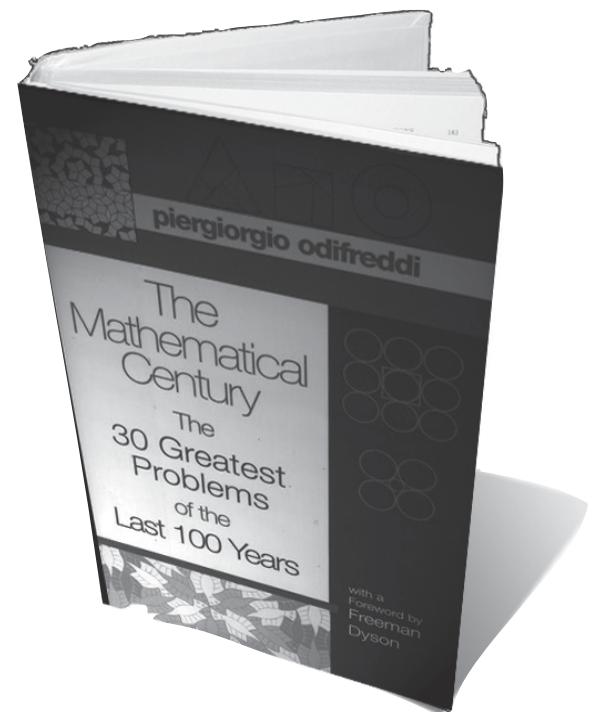
Si vous avez des commentaires ou suggestions, s.v.p. les envoyer au:
notes@smc.math.ca

The Mathematical Century: The 30 Greatest Problems of the Last 100 Years

Piergiorgio Odifreddi

Princeton University Press 2004

xvii + 204 pages.



As the title says, the book is a presentation of 30 outstanding problems in Mathematics solved in the 20th Century, presented in Chapters 2, 3 and 4. More precisely, the contents of these chapters are as follows.

Chapter 2 - Pure Mathematics:

1. Mathematical Analysis: Lebesgue Measure (1902);
2. Algebra: Steinitz Classification of Fields (1910);
3. Topology: Brouwer's Fixed-Point Theorem (1910);
4. Number Theory: Gelfand Transcendental Numbers (1929);
5. Logic: Gödel's Incompleteness Theorem (1931);
6. Calculus of Variations: Douglas' Minimal Surfaces (1931);
7. Mathematical Analysis: Schwartz's Theory of Distributions (1945);
8. Differential Topology: Milnor's Exotic Structures (1956);
9. Model Theory: Robinson's Hyperreal Numbers (1961);
10. Set Theory: Cohen's Independence Theorem (1963);
11. Singularity Theory: Thom's Classification of Catastrophes (1964);
12. Algebra: Gorenstein's Classification of Finite Groups (1972);
13. Topology: Thurston's Classification of 3-dimensional Surfaces (1982);
14. Number Theory: Wiles's Proof of Fermat's Last Theorem (1995);
15. Discrete Geometry: Hale's Solution of Kepler's Problem (1998).

Chapter 3 - Applied mathematics:

1. Crystallography: Bieberbach's Symmetry Groups (1910);
2. Tensor Calculus: Einstein's General Theory of Relativity (1915);
3. Game Theory: von Neumann's Minimax Theorem (1928);
4. Functional Analysis: von Neumann's Axiomatization of Quantum mechanics (1932);
5. Probability Theory: Kolmogorov's Axiomatization (1933);
6. Optimization Theory: Danzig's Simplex Method (1947);
7. General Equilibrium Theory: The Arrow-Debreu Existence Theorem (1954);
8. The Theory of Formal Languages: Chomsky's Classification (1957);
9. Dynamical Systems Theory: The KAM Theorem (1962);
10. Knot Theory: Jones Invariants (1984).

Chapter 4 - Mathematics and the Computer:

1. The Theory of Algorithms: Turing's Characterization (1936);
2. Artificial Intelligence: Shannon's Analysis of the Game of Chess (1950);
3. Chaos Theory: Lorenz's Strange Attractor (1963);
4. Computer Assisted Proofs: The Four-Color Theorem of Appel and Haken (1976);
5. Fractals: The Mandelbrot Set (1980).

These chapters are preceded by a well-written chapter on foundations of mathematics (sets, structures, categories and functions) and a very interesting Introduction by Freeman Dyson. The last chapter of the book discusses four not yet solved problems which the author considers of great importance: the perfect numbers problem, the Riemann Hypothesis, the Poincaré Conjecture and the P versus NP problem.

There are a few slight inaccuracies which however do not detract anything from the merit of the book, indeed a monumental task the author set for himself; I quote Serre's Finiteness Theorem for the homotopy groups of spheres (page 175); the author claims that the homotopy groups of spheres are all finite except $\pi_{2n-1}(S^n)$ for n even; actually, besides these, $\pi_n(S^n) \cong \mathbb{Z}$ is infinite for every $n \geq 1$.

Three of the four open problems described by the author are part of a list of seven problems selected by the Clay Mathematics Institute of Cambridge, Massachusetts (chosen for their longevity and resistance to previous attempts to solve them), and for whose solution the CMI offers a prize of one million US dollars. The CMI problems are the following: P versus NP; the Hodge Conjecture; the Poincaré Conjecture; the Riemann Hypothesis; Yang-Mills existence and mass gap; the well-posedness of the Navier-Stokes equations; the Birch and Swinnerton-Dyer Conjecture. Start working: you may become rich and famous!

One Hundred Years of l'Enseignement Mathématique: Moments in Mathematics Education in the Twentieth Century

Daniel Coray, Fulvia Furinghetti, Hélène Gispert,
Bernard R. Hodgson and Gert Schubring (Editors)
l'Enseignement Mathématique, Genève, 2003

The great majority of mathematicians should find something of interest in this book, the proceedings of the 2000 symposium held at the University of Geneva to commemorate 100 years of the journal l'Enseignement Mathématique (EM). The co-title of the volume, "Moments in Mathematics in the 20th Century" indicates that authors were given freedom in the way they approached their topic.

The result is a lively and interesting set of information and views that explores developments in mathematics education during the 20th century, and that raise challenges for the 21st century. The reader is given snapshots of the discipline at various times rather than an in-depth historical development. The reflections of 23 authors are grouped into five sections. All sections provide some historical perspective, and most include quotes from EM authors, many of whom were, or have since become, noted mathematicians. The articles are written either in French or in English and each article is summarized in the other language. All quotes appear in both languages. Each section concludes with a summary of discussions and a reaction to the conference presentations.

The first Section entitled, "l'Enseignement Mathématique: Birth and Stakes", contains a chapter that highlights the journal's birth, founding editors, aims, and includes a detailed analysis of the mathematical areas addressed by the authors in the journal's first fifteen years. One may be surprised that of all 504 EM articles printed before 1915, 150 were on geometry while analysis accounted for 60. The second chapter

describes the founding of the ICMI/CIEM (International Commission on Mathematics Instruction) in 1908 and EM's influence as it became its official journal. This first Section of the book concludes with a review of major 20th century journals that have supported the development of Mathematics Education as a research discipline in its own right.

The next three Sections are specific to "Geometry", "Analysis", and "Applications of Mathematics: Mathematics as a Service Subject". Each section explores the situation, first at the beginning of the 20th century, then at some time period near the middle of the century, and finally at the end of the century. The reader is challenged to look at problems of the past, to explore the present situation and to consider ways to improve mathematics education for all students, at all levels, so as to prepare them for mathematics in the 21st Century.

The book concludes with a Section entitled "Perspective for Mathematics Education". Here the authors provide a historical perspective of some social and cultural issues that have had an impact on mathematics education. They explore how a society's move from education for a few to education for all has changed the balance, both in the primary and in the secondary grades, between 'practical' and 'intellectual' mathematics. This should have resulted in changes in the mathematics education of future teachers and, if anything, have heightened the tension between the two society's two goals of having a numerate populace while educating some of the students to continue mathematics education to higher levels.

The editors, who were also the International Programme Committee for this conference, have done a commendable job of bringing together quite varied contributions in a way which is consistent for those who read the whole book, while also allowing other readers to pick selected papers without experiencing a great loss of continuity.

WANTED: Books for Review

RECHERCHÉS: Livres pour critiques littéraires

Have you written a book lately?

Would you like to see it reviewed in the CMS Notes? If so, please arrange to have a review copy sent to our Book Review Editor.

Vous avez récemment écrit un livre?

Vous aimeriez une critiques littéraires de celui-ci dans les Notes de la SMC? Si oui, veuillez faire parvenir une copie au rédacteur des critiques littéraires

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Algebraic Structures and Moduli Spaces

edited by Jacques Hurtubise and Eyal Markman

CRM Proceedings & Lecture Notes, Volume 38 AMS 2004

vi + 258 pp.

A conference with the same title was organized at the *Centre de recherches mathématiques* in July 2003. It included two series of introductory lectures as well as individual talks. The first series of lectures, by Manfred Lehn, was on some aspects of the theory of Hilbert schemes of points on surfaces. A Hilbert scheme is a construction in algebraic geometry by means of which a set of closed subvarieties of a projective space with a given Hilbert polynomial (i.e. a polynomial expressing the dimensions of the homogeneous components of the module as a function of n for large n) can be endowed with the structure of an algebraic variety. The second series of lectures, by Hiraku Nakajima and Kota Yoshioka, describes their recent work on instanton counting which identifies a generating function given in terms of (equivariant cohomology) integrals on the moduli space of instantons over R^4 with a Selberg-Witten prepotential corresponding to a family of Riemann surfaces. Topics covered include coherent sheaves and their derived categories, moduli of flat connections, Hodge structures, and the topology of affine varieties.

Rings, Modules, Algebras and Abelian Groups

edited by Alberto Facchini, Evan Houston and Luigi Salce

Lecture Notes in Pure and Applied Mathematics, volume 236

Marcel Dekker Inc. 2004, xx + 497 pp.

This volume consists of survey talks and papers presented at the Algebra Conference, Venezia 2002, held at the Venice International University in June 2002. The conference was organized into main lectures, plenary talks and communications in six sections: abelian groups, algebras and their representations, commutative rings, module theory, ring theory, and topological algebraic structures.

The conference celebrated forty years of commutative ring theory with a survey lecture by Robert Gilmer who discusses six significant developments and four subareas that have been developed in the theory. In the section on Prüfer domains he relates the following anecdote: ‘I once had a student who repeatedly asked me what multiplicative ideal theory was. Initially I gave him the same answer each time he asked. When he persisted in asking, I began to rephrase the answer in attempts to reach him. Finally (he asked no more), one day in exasperation I gave him, approximately, the following inaccurate response. “Look at a paper. If you find the term ‘Prüfer domain’ in it, it’s multiplicative ideal theory. Otherwise, it isn’t.” Inaccurate, but not completely offbase.’

Hopf Algebras

edited by Jeggrey Bergen, Stefan Catoiu and William Chin

Lecture Notes in Pure and Applied Mathematics, volume 237

Marcel Dekker Inc. 2004, viii + 262 pp.

This volume records the proceedings of the International Conference on Hopf Algebras held at DePaul University, Chicago in 2001-2002. The eighteen papers in the volume are concerned with the following topics: a new proof for the Skolem-Noether theorem, Hopf algebras of dimension p^2 , integrals for bialgebras and almost commutative Hopf algebras lacking coquasitriangularity, realization of bialgebras, representations of two-parameter quantum groups, Fourier theory for coalgebras, support cones for infinitesimal group schemes, relatively free coalgebras, coradical of the dual of a lifting of a quantum plane, classification of Hopf algebras of dimension pq , pre-Lie, dendriform and Nichols algebras, and properties of a relative Hopf module over a subring of coinvariants.

Differential Geometry of Varieties with Degenerate Gauss Maps

by Maks A. Akivis and Vladislav V. Goldberg

CMS Books in Mathematics, Springer-Verlag, 2004, xxi+255 pp.

The Gauss map of an oriented smooth surface X in Euclidean space E^3 is the mapping γ of X into the unit sphere S in E^3 such that $\gamma(x) = p$, where p is the terminal point of the unit normal from the origin. If $d\sigma$ and $d\omega$ are area elements, respectively, of the surface X and of the spherical image of X , then $d\sigma = Kd\omega$, where K is the Gaussian curvature of X . The Gauss map is degenerate at a point of X if $K = 0$ at this point, and it is degenerate on the surface X if the curvature K vanishes at all points of X . Surfaces with $K = 0$ are called developable. The definition of the Gauss map can be extended to hypersurfaces in Euclidean space E^{n+1} . The fact that the Gauss map of a hypersurface is degenerate is of projectively invariant nature. This is the reason that the degeneracy of the Gauss map can be defined in terms of projective differential geometry. The rank of the Gauss map on a smooth oriented variety (submanifold) of dimension n in a projective space P^N can then be defined. In a projective space P^N , a variety X of dimension n is said to be a variety with a degenerate Gauss map if the rank of its Gauss map is less than n .

In this book the authors study the geometry of varieties with degenerate Gauss maps, construct a classification of such varieties based on the structure of their focal images (images of the locus of foci in a plane generator of a variety), and consider applications of the theory of such varieties to different problems of differential geometry and its applications. Results obtained by Russian geometers in the 1960s are presented along with other results, all in their historical perspective. Many examples are discussed. The book is intended for researchers and graduate students interested in projective differential geometry and algebraic geometry and their applications. It can be used as a text for advanced undergraduate and graduate courses.

***An Introduction to Complex Analysis,
Classical and Modern Approaches***

by Wolfgang Tutschke and Harikrishnan L. Vasudeva
Chapman & Hall/CRC 2004, xvi + 460 pp.

The authors take the view that for the unification of the structure of mathematical analysis as a whole, it is imperative to use the results of real analysis when laying the foundations of complex analysis. Hence, in order to mitigate the difficulties of readers who are not well acquainted with real analysis, results from real analysis which are necessary for the development of complex analysis are included with sketches of proofs. Such an approach leads to short and clearly arranged proofs of basic statements. This provides an advantage for those who are mainly interested in applications. A disadvantage is that stronger assumptions are often necessary for some theorems. The book includes also other approaches leading to most general versions of statements. Such approaches are, for instance, G. Fichera's proof of the Goursat theorem and Th. Estermann's proof of the Cauchy integral theorem. Examples and exercises with elaborate hints are given in each chapter.

The book can be used as a text for graduate and advanced undergraduate courses in Complex Analysis.

The Geometry of Physics: An Introduction.

Second edition, by Theodore Frankel
Cambridge University Press, 2004, xxvi + 694 pp.

This book is intended to provide a knowledge of those parts of exterior differential forms, differential geometry, algebraic and differential topology, Lie groups, vector bundles, and Chern forms that are essential for a deeper understanding of both classical and modern physics and engineering. Included are discussions of analytical and fluid dynamics, electromagnetism (in flat or curved space), thermodynamics, elasticity theory, the geometry and topology of Kirchoff's electric circuit laws, soap films, special and general relativity, the Dirac operator and spinors, gauge fields including Yang-Mills, the Aharonov-Bohm effect, Berry phase, instanton winding numbers, quarks, and the quark model for mesons. The discussion of abstract notions of differential geometry is preceded by a rather extensive introduction to the study of surfaces in ordinary space designed to help the development of geometric intuition.

The second edition includes three new appendices: Appendices C and D are applications of the elements of representation theory of compact Lie groups. Appendix E delves deeper into the geometry and topology of compact Lie groups.

This book will be useful to graduate and advanced undergraduate students of mathematics, physics and engineering.

NEWS FROM DEPARTMENTS**McGILL UNIVERSITY, MONTREAL, QUEBEC.**

Promotion: Daniel Wise (Associate Professor - June 2004).

Appointments: Pengfei Guan (Professor and NSERC Chair, Geometric Analysis, July 2004); Paul Tupper (Assistant Professor, Applied Mathematics, June 2004).

Resignation: Martin Gander (August 31, 2004)

Award/Distinction: Jacques Hurtubise (Fellow of the Royal Society of Canada).

Visitors: Stephan DeBievre (France, Analysis, January-August 2005); Qingchan Tian (China, Number Theory, August 2004-August 2005).

UNIVERSITY OF WESTERN ONTARIO, LONDON, ON

Appointments: Tatyana Foth (Assistant Professor, symplectic geometry, analysis on manifolds, automorphic forms, July 2004); Rasul Shafikov (Assistant Professor, several complex variables, July 2004).

Promotions: Andre Boivin (Professor July 2004); Dan Christensen (Associate Professor with tenure, July 2004)

Retirements: Robert Bryan (Associate Professor, June 30, 2004); Seymour Ditor (Associate Professor, June 30, 2004)

Awards/Distinctions: Jan Minac (Distinguished Research Professor, Faculty of Science UWO, July 1, 2004-June 30, 2005); Robert Bryan (Faculty of Science Award of Excellence for Undergraduate Teaching). Vistor: John Labute, (Canada, algebra and number theory, September 1-December 31, 2004)

UNIVERSITY OF GUELPH, GUELPH, ON

Appointments: Dr. Dan Ashlock (Associate Professor, Chair of Bioinformatics, Fall 2004).

Retirements: Rod Gentry (Professor, Applied Mathematics, 2005); Gordon Hines (Professor, Statistics, 2005)

Awards: Gerarda Darlington (Associate Professor, Statistics), received the University of Guelph Faculty Association Distinguished Professor Award for the College of Physical and Engineering Science.

Postdoctoral Fellows: Arni Rao (modelling of hepatitis A transmission in Canada; works with C. Bauch); Rangarjan Sudarsan (Computational Fluid Dynamics with applications in Microbiology; works with H. Eberl).

Other News: The Department is proud to announce the creation of the Biomathematics and Biostatistics Research Group (BioM&S) in Summer 2004. The group unites researchers in our department with interests in applications of Mathematics and Statistics to Biological Sciences and collaborates with like scientists in our university, as well as other universities and hospitals.

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CMS Awards Announcement / Lauréats des Prix de la SMC

2004 Distinguished Service Award / Prix pour service méritoire 2004



H.E.A. Campbell (CMS President), Edgar Goodaire (Memorial)

Dr. Goodaire went to Memorial University in 1973 after completing a Ph.D. at the University of British Columbia and an undergraduate degree at the University of Toronto. He was promoted to Full Professor in 1989. He has served on every major committee in the Department of Mathematics and the Faculty of Science and was Head of the Department during the period 1991-1994. Outside the university, he is an accomplished violinist who, for many years, played in the Newfoundland Symphony Orchestra. He enjoys watching professional football and avidly follows his beloved Toronto Argonauts on television.

Edgar Goodaire est arrivé à l'Université Memorial en 1973 après un doctorat à l'Université de la Colombie-Britannique et des études de premier cycle à l'Université de Toronto. Il est devenu titulaire en 1989. En plus de siéger à tous les comités importants du département de mathématiques et de statistique et de la Faculté des sciences, il a dirigé le département de 1991 à 1994. Hors de la vie universitaire, il est un violoniste de talent et a d'ailleurs joué pendant de nombreuses années dans l'Orchestre symphonique de Terre-Neuve. Il est un fan de football professionnel et suit religieusement les parties de ses chers Argonauts de Toronto à la télévision.

mathématique canadienne, de la Société mathématique du Canada et de la communauté mathématique du Canada atlantique.

Edgar Goodaire participe depuis de nombreuses années aux activités de la SMC, où il a occupé plus d'un poste stratégique. Il a d'abord été rédacteur-en-chef du Bulletin canadien de mathématiques de 1981 à 1985. Il a ensuite siégé au Comité des publications de 1983 à 1988 et en a assumé la présidence de 1986 à 1988. Il a également fait partie du Comité de mises en candidature à deux reprises : en 1982-1983 et de 1994 à 1997 et il a présidé le comité de 1995 à 1997. Il a aussi été trésorier de 1990 à 1992 et il a été membre du Groupe de travail sur les stratégies administratives en 1999-2000. Il a servi pendant 3 ans sur le Comité des services électroniques et l'a présidé de 1999 à 2000. En 2001-2003, il a occupé le poste de vice-président de la région Atlantique. Durant cette période, il a été premier vice-président, membre du conseil d'administration, membre du Comité de sélection du Prix pour service méritoire et représentant du président au Comité de publications. Il est tout nouvellement membre du Comité sur l'avancement des mathématiques et a été membre du jury du premier Prix d'excellence en enseignement de la SMC.

Outre ses services rendus à la SMC, Edgar Goodaire a défendu la cause des mathématiques toute sa vie au Canada atlantique. En ce moment, il participe aux activités de l'Association pour l'avancement de la recherche mathématique en Atlantique (AARMA). En particulier il joue un rôle clé

The recipient of the 2004 Canadian Mathematical Society Distinguished Service Award was Edgar G. Goodaire from the Department of Mathematics and Statistics, Memorial University of Newfoundland, St John's. The award recognizes lifelong work to the development of mathematics in the country and commitment and service to the Canadian mathematical community, to the Canadian Mathematical Society and to the Atlantic mathematical community.

Edgar Goodaire has a very long history of service to the CMS and has occupied many strategic positions. He started as an Editor-in-Chief of the Canadian Mathematical Bulletin from 1981 to 1985. He was a member of the Publications Committee (1983-88) and he chaired the Committee from 1986 to 1988. He served on the Nominating Committee on two occasions: as member (1982-83 and 1994-97) and as Chair (1995-97). He was Treasurer from 1990 to 1992 and a member of the Task Force on Office Strategies from 1999 to 2000. He served on the Electronic Services Committee for three years and was Chair from 1999

to 2000. From 2001 to 2003, he was the CMS Vice-President for the Atlantic Region. During this period he was Deputy President, Board member, member of the Distinguished Service Award Committee and the President's delegate on the Publications Committee. He has just become a member of the Advancement of Mathematics Committee and served on the jury for the first CMS Excellence in Teaching Award.

Apart from his service to the CMS, Edgar Goodaire has worked all his life for mathematics in Atlantic Canada. Currently, he is very involved in the Atlantic Association for Research in the Mathematical Sciences (AARMS) and, in particular, the organization of the AARMS summer schools. He has done a lot of work with APICS (Atlantic Provinces Council on the Sciences) and has been Chair of the APICS Mathematics and Statistics Committee since 2001.

Dr. Goodaire is a leading world expert on certain non-associative algebraic structures known as loops, in particular Bol and Moufang loops. He founded the field of alternative loop rings. He has published over 60 research articles and four books, including a recent undergraduate textbook in Linear Algebra. His popular text "Discrete Mathematics with Graph Theory" with Michael M. Parmenter is scheduled for a third edition. His research has been funded continuously by NRC/NSERC throughout his career.

Le Prix pour service méritoire 2004 de la Société mathématique du Canada (SMC) a été décerné à Edgar G. Goodaire du département de mathématiques et de statistique de l'Université Memorial (St John's, T.-N.-L.). Ce prix récompense Edgar Goodaire pour sa contribution de toute une vie au développement des mathématiques au pays, ainsi que pour son engagement et ses activités au sein de la communauté mathématique canadienne, de la Société mathématique du Canada et de la communauté mathématique du Canada atlantique.

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dans l'organisation des cours d'été de l'Association. Il a aussi beaucoup fait pour le Conseil des provinces atlantiques pour les sciences (CPAS), notamment au sein du comité des mathématiques et de la statistique du CPAS qu'il préside depuis 2001.

Edgar Goodaire est un expert mondial de certaines structures algébriques non associatives connues sous le nom de boucles, en particulier les boucles de Moufang et les boucles de Bol. Il a fondé le domaine des anneaux de boucles alternatifs. Il a publié plus de 60 articles scientifiques et quatre livres, incluant un livre récent en algèbre linéaire. Son manuel très populaire pour le premier cycle universitaire, *Discrete Mathematics with Graph Theory*, publié en collaboration avec Michael M. Parmenter, en est à sa troisième édition. Sa recherche a été subventionnée continuellement depuis le début de sa carrière par le CNRC/CRSNG.

2004 Doctoral Prize / Prix de Doctorat 2004



Nicolaas Spronk (Waterloo) and Ragnar-Olaf Buchweitz
(CMS Chair-Research Committee)

It is with great enthusiasm that the Canadian Mathematical Society awarded the 2004 Doctoral Prize to Nicolaas Spronk (University of Waterloo). The CMS Doctoral Prize recognizes outstanding performance by a doctoral student who graduated from a Canadian university.

Nicolaas Spronk received his B.Sc. from the University of Alberta in 1995 and his M.Math. from the University of Waterloo in 1997. He was a graduate student of Professor Brian Forrest at the University of Waterloo and completed his Ph.D. in 2002. Since then he has held an NSERC postdoctoral fellowship at Texas A&M University and is now an assistant professor at the University of Waterloo.

As a graduate student of Professor Brian Forrest at the University of Waterloo, Nicolaas Spronk wrote a remarkable thesis in the area of abstract harmonic analysis. He has used the new and highly technical theory of operator spaces to solve hard problems in non-commutative harmonic analysis. Nicolaas Spronk has launched a productive and promising research career with almost ten papers published or accepted for publication.

C'est avec grand enthousiasme que la Société mathématique du Canada a décerné son Prix de doctorat 2004 à Nicolaas Spronk (Université de Waterloo). La SMC a créé le Prix de doctorat pour récompenser le travail exceptionnel d'un étudiant au doctorat en mathématiques ayant obtenu un diplôme d'une université canadienne.

Nicolaas Spronk a obtenu un baccalauréat en sciences de l'Université de l'Alberta en 1995 et une maîtrise en mathématiques de l'Université de Waterloo en 1997. Il a étudié au troisième cycle à Waterloo sous la direction du professeur Brian Forrest et a terminé son doctorat en 2002. Depuis, grâce à une bourse de recherche du CRSNG, il a fait un postdoctorat au Texas (Texas A&M University) et est maintenant professeur associé à l'université Waterloo.

Sous la direction de Brian Forrest, à Waterloo, Nicolaas Spronk a rédigé une thèse remarquable dans le domaine de l'analyse harmonique abstraite. Il s'est servi de la nouvelle et très technique théorie des espaces d'opérateurs pour résoudre des problèmes difficiles en analyse harmonique non commutative. Nicolaas Spronk est déjà un chercheur productif et prometteur : une dizaine de ses articles ont déjà été publiés ou acceptés pour publication.

2004 Adrien-Pouliot Award / Prix Adrien-Pouliot 2004

C'est avec grand plaisir que nous avons présenté le prix Adrien-Pouliot 2004 à Jean-Marie De Koninck. Les notes biographiques de M. De Koninck ont été publiés dans le numéro de novembre 2004 des Notes de la SMC. [M. Adrien Pouliot, figuré à droite, est le petit-fils de M. Adrien Pouliot, d'après lequel le prix est nommé]

It was with great pleasure that the Society presented the Adrien-Pouliot 2004 Award to Dr. Jean-Marie De Koninck. Dr. De Koninck's biography and citation were published in the November 2004 issue of the CMS Notes. [Mr. Pouliot (right) is the grandson of the namesake of the prize, Dr. Adrien Pouliot]



H.E.A. Campbell, Jean-Marie De Koninck (Laval), Adrien Pouliot, Bernard Hodgson (Laval)

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2004 Coxeter-James Prize / Prix Coxeter-James 2004



*Dr. Izabella Laba (UBC), H.E.A. Campbell,
Ragnar-Olaf Buchweitz*

Dr. Izabella Laba obtained an M.Sc from Wroclaw University, Poland, in 1986. After three years as a Research Teaching Assistant at Wroclaw University, she attended the University of Toronto and obtained her Ph.D. under the direction of Israel Michael Sigal in 1994. Her thesis dealt with "N-particle Scattering in Constant Magnetic Fields".

She held a Hedrick Assistant Professorship at the University of California at Los Angeles, UCLA, from 1994 to 1997 and an Assistant Professorship at Princeton University from 1997 until 2000. In July 2000, she joined the University of British Columbia as an Associate Professor and was granted tenure there two years later.

En 1986, Izabella Laba a obtenu une maîtrise ès sciences de l'Université de Wroclaw, en Pologne. Après trois ans d'assistantat de recherche et d'enseignement à cette université, elle est arrivée à l'Université de Toronto en 1989, où elle a décroché un doctorat sous la direction d'Israel Michael Sigal. Sa thèse, déposée en 1994, s'intitulait « N-particle Scattering in Constant Magnetic Fields ».

Elle a occupé un poste de professeur adjoint à UCLA (University of California at Los Angeles) de 1994 à 1997, et à Princeton de 1997 à 2000. En juillet 2000, elle est entrée à UBC (University of British Columbia) en tant que professeur adjoint, et y a obtenu sa permanence deux ans plus tard.

Nets Katz et Terence Tao sont considérés comme une véritable percée, car ils éliminent un obstacle naturel à l'amélioration des contributions précédentes de Thomas Wolff et Jean Bourgain.

En ce moment, elle concentre ses recherches sur la théorie combinatoire des nombres et la théorie de la mesure. En particulier, elle construit avec Michael T. Lacey de grands ensembles d'entiers sans k -progression et, de concert avec Mihail N. Kolountzakis, elle étudie les pavages périodiques et les domaines spectraux de l'espace euclidien.

The Coxeter-James Prize recognizes young mathematicians who have made outstanding contributions to mathematical research.

Dr. Izabella Laba is an outstanding young analyst with research interests in Harmonic Analysis, Combinatorics and Mathematical Physics. Her work spans a broad spectrum from pseudo-differential calculus to Szemerédi's theorem, with major contributions to quantum scattering theory and geometric combinatorics.

In her Ph.D. thesis, Laba made significant contributions to the theory of N -particle scattering in a constant magnetic field, addressing the issue of asymptotic completeness for various Hamiltonians and decaying potentials in the nonlinear Schrödinger equation. She continued this work jointly with Christian Gérard and they presented these results in a monograph in 2002.

A second thread in Laba's work concerns the Kakeya conjecture on Hausdorff and Minkowski dimension of Besicovitch sets. Her joint work with Nets Katz and Terence Tao is hailed as a breakthrough, surmounting a natural barrier to improving earlier lower bounds by Thomas Wolff and Jean Bourgain.

Her current research deals with questions in combinatorial number theory and measure theory, constructing, with Michael T. Lacey, "large" sets of integers without k -progression, and working, with Mihail N. Kolountzakis, on periodic tilings and spectral domains in Euclidean space.

Le prix Coxeter-James rend hommage aux jeunes mathématiciens qui se sont distingués par l'excellence de leur contribution à la recherche mathématique.

Izabella Laba est une jeune analyste exceptionnelle qui s'intéresse à l'analyse harmonique, à la combinatoire et à la physique mathématique. Ses travaux touchent un large éventail allant du calcul pseudo-différentiel au théorème de Szemerédi, en passant par d'importantes contributions à la théorie de la diffusion quantique et à la combinatoire géométrique.

Dans sa thèse de doctorat, Izabella Laba a fait une importante contribution à la théorie de la diffusion de N -particules dans un champ magnétique constant, en abordant la question de la complétude asymptotique de divers hamiltoniens, et les potentiels décroissants dans l'équation non linéaire de Schrödinger. Elle a poursuivi ces travaux en collaboration avec Christian Gérard, et ils ont d'ailleurs présenté ensemble leurs résultats dans un ouvrage publié en 2002.

Les travaux d'Izabella Laba abordent également la conjecture de Kakeya sur les dimensions Hausdorff et Minkowski des ensembles de Besicovitch. Ses travaux en collaboration avec

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2004 G. de B. Robinson Prize / Prix G. de B. Robinson 2004

The 2004 G. de B. Robinson Award was awarded jointly to Victor Havin and Javad Mashreghi for their two papers "Admissible Majorants for Model Subspaces of H^2 , Part I: Slow Winding of the Generating Inner Function" and "Admissible Majorants for Model Subspaces H^2 , Part II: Fast Winding of the Generating Inner Function" which were published in the Canadian Journal of Mathematics, Volume 55 (2003), no. 6, pages 1231-1263 and 1264-1301.

These papers produce striking results on admissible majorants attached to model subspaces of the Hardy space of functions in the upper half-plane, leading to a novel perspective on the Multiplier Theorem of Beurling and Malliavin, one of the deepest results of harmonic analysis in the twentieth century.

Written in a careful and engaging style, providing both a lucid survey of the background, and complete enlightening proofs of their main results, these papers have recently been exploited by the authors and Fedor Nazarov to obtain a new proof of the Beurling and Malliavin Theorem that does not leave the real line, and applies to a large class of model subspaces.



Javad Mashreghi (Laval), Dana Schlomiuk (CMS Chair - Publications Committee), H.E.A. Campbell

Le prix G. de B. Robinson 2004 a été accordé conjointement à Victor Havin et Javad Mashreghi pour leur deux articles intitulés : "Admissible Majorants for Model Subspaces of H^2 , Part I: Slow Winding of the Generating Inner Function" et "Admissible Majorants for Model Subspaces H^2 , Part II: Fast Winding of the Generating Inner Function" publiés dans le Journal canadien de mathématiques, Volume 55 (2003), no. 6, pages 1231-1263 et 1264-1301.

Ces articles présentent des résultats frappants sur les majorants admissibles associés aux sous-espaces modèles de l'espace de Hardy de fonctions du demi-plan supérieur, et mènent à une nouvelle perspective sur le théorème de Beurling et Malliavin, un des résultats d'analyse harmonique les plus profonds du vingtième siècle.

Ces articles présentent un panorama lucide des fondements du sujet et des démonstrations très claires de leurs résultats originaux principaux. Ces travaux ont récemment permis à Havin, Mashreghi et Fedor Nazarov de donner une démonstration nouvelle du théorème de Beurling et Malliavin qui reste confinée à la droite réelle, et peut être appliquée à une vaste classe de sous espaces modèles.



Victor Havin

Victor Havin has lectured and worked in many countries, particularly at McGill University for nine semesters. His main research has been on spaces of analytic functions, approximation, potential theory, and harmonic analysis. He is the author of nearly 100 publications, including a monograph, with B. Joerick, entitled "The Uncertainty Principle in Harmonic Analysis" which was published by Springer-Verlag in 1994.

Victor Havin obtained an Honorary Doctorate from Linkoping University, Sweden, in 1993. He was the Onsager Professor in 2000 at the Norwegian Univer-

sity of Science and Technology, the Spencer Lecturer, Kansas State University, in 1996, and he became a distinguished scholar of the Russian Federation, awarded by the President of Russia, in 2003.

Victor Havin est né à Leningrad (Russie) en 1933. Il a obtenu son diplôme en mathématiques en 1955 et son premier doctorat de l'Université d'État de Leningrad en 1958, sous la direction de Leonid Kantorovich. En 1969, il a décroché un second doctorat de niveau supérieur à cette même université, où il avait commencé à enseigner en 1959 avant de devenir titulaire en 1970.

Victor Havin a dirigé 26 étudiants au doctorat. De ce nombre, huit ont obtenu un second doctorat de niveau supérieur et trois ont reçu le prix Salem décerné à de jeunes analystes. Il a enseigné et travaillé dans de nombreux pays, notamment à l'Université McGill pendant neuf semestres. Ses recherches portent principalement sur les espaces de fonctions analytiques, l'approximation, la théorie du potentiel et l'analyse harmonique. Il a signé près de 100 publications, dont une monographie, avec B. Joerick, intitulée *The Uncertainty Principle in Harmonic Analysis* et publiée par Springer-Verlag en 1994.

Victor Havin a reçu un doctorat honorifique de l'Université de Linkoping (Suède) en 1993. L'Université norvégienne de sciences et de technologie lui a également décerné le titre de « Professeur Onsager » en 2000, et l'Université d'État du Kansas, le prix de conférence Spencer en 1996. Il a de plus reçu le titre de chercheur éminent de la Fédération de Russie, décerné par le président de la Russie en 2003.

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For about four decades, a very lively group at the University of Waterloo has made an enormous contribution to whetting the interest of secondary, and later elementary, students in mathematics and bringing them along in the profession, as well as fostering close collaboration among teachers both within Ontario and across the country. As many readers of the *Notes* will not appreciate how extensive the activities at the University of Waterloo have become, I have asked Peter Crippin, the Director of its Centre for Education in Mathematics and Computing to tell us in some detail what is going on. Not mentioned in the article is that the Centre has a contract to operate, for the Canadian Mathematical Society, the Canadian Open Mathematics Competition written by secondary students every November as a qualifying paper for the Canadian Mathematical Olympiad. You will see that one arm of its program involves professional development of teachers, an area of interest in particular to the Mathematics Education Forum at the Fields Institute. It was at a Forum meeting that I found out from Margaret Sinclair of the Faculty of Education at York University about her use of a Japanese initiative called Lesson Study in her own preservice training of teachers. I thought you might be interested to hear about it. Finally, I conclude with some data from Canadian Putnam history abstracted from a recent *Monthly* article.

The Centre for Education in Mathematics and Computing

At a faculty social a few weeks back I sat at a table at which there were a number of new faculty members. The conversation at these kinds of functions tends to be pretty predictable and usually it doesn't take too long before your thoughts drift off to unproven theorems or problems that you haven't been able to solve. This time, however, things were a little different. These young faculty members wanted to talk about the influences in their lives and education that made them want to do mathematics for a living. It was nice to hear about parental influence and the positive experiences they each had within the school system (and how much they valued the efforts of their teachers). One of these young people, however, made a very important point about the need for challenge in the school system. He said that the challenge for him came from his teachers and the problems they provided. He made the specific point that working on problems in preparation for contests meant a great deal to him in learning how to solve problems in mathematics. And in addition, he said, it gave him confidence in his ability to go forward.

This has really been the mandate of the Canadian Mathematics Competition group since its inception in 1963. The mandate has always been to provide students with a challenge that they couldn't get in their regular classroom. The first contest was the Junior Mathematics Contest that was held for students in Grades 9, 10 and 11 in April, 1963. It started with just 350 students writing this first contest. While today it looks a little faded, it was in reality not much different from the contests of today. The first contest emphasized mechanical and thinking skills along with mathematical problem solving. In short, it represented everything that students still need today to be successful in their mathematics studies. These original

contests were sponsored by the University of Waterloo but their impetus came from high school teachers in southwestern Ontario. The secondary school teachers who were involved in creating this first math contest were Ed Anderson, Ron Dunkley, Don Attridge and Bill Nediger. At the University of Waterloo the people who supplied the encouragement and the foresight were Ralph Stanton and Ken Fryer. And through the years, we have been fortunate to have such talented faculty members as Ron Scions, Larry Davidson, Ron Dunkley, Ed Anderson and Ruth Malinowski.

Since its modest beginnings in the 60's there have been a number of changes. Today there are twelve math "competitions", two computing competitions, a variety of Web materials and written resources, as well as many seminars and workshops for both teachers and students. The Canadian Mathematics Competition, the body first created to develop and administer the contests, is still a major part of our organization but now there are several new parts. These parts are part of what is now known as the Centre for Education in Mathematics and Computing (CEMC) which was created in 1995. And whereas in the beginning, the work was done by volunteers today we have six full time faculty who all teach at the university, four retired high school teachers working on a part time basis, two full time "volunteers", six full time staff and a myriad of coop students. The operation itself generates some income from the math contests and selling of books but in order to survive it is necessary to seek outside funding. To date, we have received significant funding from several outside organizations including Sybase, the Federal Government, Sun Microsystems, Imperial Esso and, of course, the University of Waterloo.

Over the past four or five years, there have been a number of changes within our organization. First and foremost, we have started to offer written non-competitive problem solving papers. We have done this because we believe that a large number of young people should learn how to communicate mathematics in written form to others. And they should learn to do this in an environment that encourages rather than discourages. As a result, we have the Fryer, Galois and Hypatia contests for students at the Grade 9, 10, 11 level. These papers are made up of four written solution problems ranging from fairly straightforward to quite difficult. School standings are not produced and students are encouraged to improve their work by using materials available on the Web. In the same realm started a new activity this year entitled the "Emmy Noether" which is for Grade 5 and 6 students. For this, we have three sets of six problems that are available on the Web, one in the fall and two in the winter. Again, students are not ranked and this activity takes place anonymously within individual classrooms. The second major change within our organization that has really just started to take place, but will soon start to accelerate is the use of the Web. We have produced all kinds of resources on the Web that we distribute at no charge to students and teachers. This has the benefit of making good mathematical materials available in areas in which there would normally be no access. This means that students living in remote areas or abroad now have access to mathematical and computing materials that were once beyond their reach.

In order to give some sense of the activities in which the CEMC is involved, it would be useful to give a brief description of them and who is responsible for each:

- “Mathfrog” is a Web based activity for students in Grades 4, 5 and 6. It allows students and teachers to access a wide range of mathematical games that are played either at home or in the classroom. Each activity is followed up with a paper and pencil activity to reinforce the concepts illustrated in the game. This activity has been developed by Jim Schurter along with a number of coop students. In the near future, this will be extended to Grades 7 and 8 and will involve the learning of computational mathematics as well as problem solving skills. This latter part has been developed by Dean Murray, who like Jim, is a retired secondary school teacher.
- “Emmy Noether Circles” has been developed by Bev Marshman, who is a member of our applied math department. Along with a committee of elementary school teachers, Bev has developed these activities for students at the Grade 5 and 6 level. This activity supplements a series of books that she has developed, along with Lorna Morrow, for students in Grades 4, 5 and 6.
- A Teacher Development Program has been developed by Enzo Carli from the CEMC. Enzo has developed a series of workshops that he does with elementary school teachers that take place in a variety of different formats. In addition, Enzo is the Director of two four day workshops in mathematics given for both elementary and secondary school teachers which are held each August. There is a small registration fee for these activities and funding is provided by the Waterloo Mathematics Foundation and Imperial Esso. In addition, a four day computer science workshop is run for secondary school teachers in August. Sandy Graham, a former secondary school teacher, and now a University of Waterloo faculty member, directs this workshop.
- The Canadian Mathematics Competition is the part of the CEMC that is responsible for the mathematics competitions themselves. This part of the organization has worked very hard over the past few years to develop new concepts in mathematics “competitions”. The Director of this organization is Barry Ferguson and its problems chair is Ian VanderBurgh (Associate Director of the CEMC). The contests themselves are put together by teachers but much work gets done on them once they reach the University. Helping Ian and Barry are Larry Rice, Mike Eden, Lloyd Auckland and Peter Crippin.
- An “Imperial Esso Seminar for Young Women” is directed by Sandy Graham and is held twice yearly, once in May and once in July. Young women are selected from all across Canada and are brought to the University of Waterloo for a week long seminar where they learn about aspects of computing. For the past two years we have had 48 young women at each of these two seminars. Because the response to these seminars has been so positive, selection is done on a random basis after certain basic criteria have been met.
- A “Repository for Resources” for both elementary and secondary school teachers is being run by Judith Koeller, a faculty member here at the University of Waterloo. This repository will be open in September, 2005, and is a collection of materials that secondary

school teachers can use in classrooms. These will be free of charge and can be downloaded from the Web.

- The Canadian Computing Competition is directed by Troy Vasiga who is a faculty member here at the University of Waterloo. This competition has both a Junior and Senior component. The Junior component is for students in any grade of high school, who do not have an extensive computing background, while the Senior component is for those students who have a more extensive background. The top 20 students in these competitions are brought to the University of Waterloo in May where Canada’s Informatics Olympiad team is selected.

This gives the reader some idea of both the background and the present activities of the CEMC. In summary, it would be fair to say that the CEMC owes its strength to the foresight of our founders and to the dedicated hard work of both our faculty and staff. Our staff includes Kim Schnarr, Joanne Kursikowski, Angie LaPointe, Matthew Oliver, Linda Schmidt, Judy Fox and Carolyn Sedore. The spirit of the place is perhaps best exemplified by Lloyd Auckland and Ed Anderson who still come into the university to volunteer at least two or three times every week. Ed has just had major heart surgery and Lloyd, who at 81, just keeps on ticking. They represent the best of what we do.

All of our activities can be found on the Web at:

www.cemc.uwaterloo.ca.

Peter Crippin (pwcrippi@math.uwaterloo.ca)

Lesson study in the Preservice Program

Linked closely to research on the work of mathematics teaching (cf., Ball & Bass, 2000; Lampert, 2001) is the growing body of literature on lesson study (cf, Fernandez, 2002; Murata & Takahashi, 2002; Stigler & Hiebert, 1999).

Lesson Study, originally developed in Japan, is a form of practitioner research based on a cyclical process of design, test, analysis and revision. Lesson Study usually involves teachers focussed on improving their practice, but Hiebert, Morris, and Glass (2003) suggest that it is also valuable for teacher candidates. They point out that Lesson Study could help preservice teachers understand (1) that competency in teaching develops over time, (2) that sharing ideas and results with colleagues is important, and (3) that exemplary lessons are the result of analysis and deep knowledge.

In the 2003-2004 year, I piloted a Lesson Study assignment (worth 30% of the grade for the course) with two preservice classes - one primary/junior, and one junior/intermediate - at York University. My aim was to investigate whether Lesson Study was workable given the limitations of a preservice course, and if so, to identify and address problems with the assignment or the assignment/course interface. At the beginning of the course the teacher candidates chose partners and developed their lessons according to the assignment guidelines. They handed in initially:

- A description of the pair’s preparation for the planning of the lesson. This included such items as: methods for teaching the

chosen concept (based on research), misconceptions that students might have with regard to the concept, and examples of questions to ask during the class discussion.

- A lesson plan, developed according to a three-part lesson format (opening — something related to the lesson that grabs students' attention and helps them recall previous knowledge; middle — an opportunity for students, independently or in groups, to investigate a mathematical problem; and closing — students share their results, while the teacher acts as discussion leader - helping students notice relationships and draw conclusions).

After feedback each teacher candidate in the pair was required to teach the lesson and candidates were encouraged to watch one another, if possible. The partners then compared their experiences and analyzed samples of their students' work. Based on their deliberations, they revised the lesson and handed in the second part of the assignment:

- Work of four students from each class, and an analysis of whether that work provided evidence of student understanding of the concept(s) taught.
- An analysis of the sessions, addressing what went well, and what did not go well in light of the original plan.
- A revised lesson plan.

There were few organizational problems connected with the Lesson Study assignment. Students responded positively to the experience, and those who arranged to watch one another were especially enthusiastic about the process. The activity generated a lively, ongoing conversation in both classes about how to present particular concepts.

The assignments that were studied in depth showed that in many cases, candidate attitudes towards their own teaching changed. They focussed less on their "teaching mistakes" and more on finding methods to help students make conceptual links.

Three students were interviewed. They were very positive, especially with regard to the research component of the assignment. All three noted that the Lesson Study assignment had helped them see that planning must include researching what experts have to say, and investigating student misconceptions. They also commented that they now looked for lessons to modify, rather than always trying to "reinvent the wheel". The interviewed students also mentioned that the ideas learned in the assignment had help them plan subsequent lessons in mathematics and in other subject areas.

On the other hand, assignments and interview comments about "what did not go well" indicated that preservice students need to explicitly consider organizational issues such as timing, choice of manipulatives, and distribution of materials. This is in line with findings on the beginning teacher's need to address class management and timing in addition to subject-related concerns. In addition, the analysis of student work in the second part of the assignment showed that the preservice candidates sometimes missed or misinterpreted evidence of student understanding. In light of these observations a section on organizational issues was added to the assignment, and additional

emphasis on evaluating student work samples has been added to the course content.

In the 2004-2005 year, a revised Lesson Study assignment is being used with four preservice classes - 2 primary/junior, 1 junior/intermediate, and 1 intermediate/senior. It will investigate whether a mathematics Lesson Study experience at the preservice level helps candidates to plan more effective mathematics lessons. It will also explore, in more depth, candidates' attitudes towards the use of such collaborative teaching experiments.

Margaret Sinclair, Faculty of Education, York University.

References

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**CMS Summer
Meeting 2005**

May 1, 2005

**Réunion d'été
2005 de la SMC**

1 mai 2005

Putnam History

Readers of the *American Mathematical Monthly* may have noticed this article:

Joseph A. Gallian, *The first sixty-six years of the Putnam Competition*
AMM 111 (2004), 691-699

It provides a history of the competitions, a listing of the top five scores and the median scores for each year along with the number of participants. There is a discussion of the performances of teams and the Putnam Fellows (top five students, with occasionally a sixth when a tie occurs).

Altogether there have been 250 separate Putnam Fellows (335 counting multiplicity). Among the five people who have been Fellows for the maximum four times is Ravi Vakil, formerly of the University of Toronto. Among the sixteen people who have been Fellows for three times are David Ash, formerly of the University of Waterloo, and J.P. Grossman, formerly of the University of Toronto. 39 people have been Fellows exactly twice.

Of the 45 Universities listed as having placed among the top five or having Putnam Fellows at some time, 7 are Canadian. In the following list, after the name of the university, the first five numbers tell how often the team placed first, second, third, fourth, fifth, and the last number indicates the number of Putnam Fellows listed in the results.

University of Toronto (4, 5, 4, 3, 1; 23)

University of Waterloo (2, 3, 5, 1, 4; 8)

Queen's University (1, 0, 1, 1, 0; 1)

University of British Columbia (0, 1, 0, 0, 1; 1)

University of Manitoba (0, 0, 0, 1, 0; 1)

McGill University (0, 0, 0, 1, 0; 1)

University of Alberta (0, 0, 0, 0, 0; 2)

The University of Toronto won four out of the first six Putnam Competitions; it could not compete in 1939 and 1941, as its department set the paper.

The article includes the complete 1938 Putnam examination. Here is one of the questions:

Let $P(y) = Ay^2 + By + c$ be a quadratic. Suppose that $a \neq b$ are roots of $P(y) - y = 0$. Show that a and b satisfy the quartic equation $P(P(y)) - y = 0$ and write down a quadratic equation for the other two roots. Apply this to solving

$$(y^2 - 3y + 2)^2 - 3(y^2 - 3y + 2) + 2 - y = 0 .$$

Fields Institute Fellows - Call for Nominations

In 2002, the Fields Institute designated a number of people as Fields Institute Fellows in recognition of outstanding contributions to the Fields Institute and its activities. It is a lifetime appointment.

Each year, new appointments may be made to recognize others who have contributed in a significant way to activities at the Fields Institute and within the Canadian mathematical community. Seven new fellows were appointed in 2003, and six more in 2004.

This is a call for nominations for 2005 Fields Institute Fellows. To nominate someone, please send a CV plus a letter briefly outlining why your candidate is a worthy nominee, to:

The Director
Fields Institute
222 College Street, 2nd floor
Toronto, Ontario M5T 3J1, CANADA
or to proposals@fields.utoronto.ca
The deadline is February 15, 2005.

Winners of the CRM-Fields prize are automatically recommended for fellowship. No member of the current Fields Institute Board of Directors nor any continuing member of the Fields Institute Scientific Advisory Panel will be eligible. We encourage nominations of all qualified individuals, including women, members of visible minorities, and persons with disabilities.

The selection committee for 2005 consists of:
Barbara Keyfitz (Chair)
Ken Davidson
Richard Kane
Kumar Murty
Tom Salisbury

CMS/CSHPM SUMMER 2005 MEETING

University of Waterloo, Waterloo, Ontario June 4 - 6, 2005

*O*n behalf of the University of Waterloo, the Department of Pure Mathematics invites the mathematical community to the joint Summer 2005 Meeting of the Canadian Mathematical Society (CMS) and the Canadian Society for History and Philosophy of Mathematics (CSHPM).

Following the usual format of the CMS Summer Meeting, the program will include a wide variety of sessions, a contributed paper session, plenary and prize lectures, and a public lecture.

Most activities and all scientific talks will be held at the University of Waterloo. The most up-to-date information concerning the program, including detailed schedules, will be made available at the meeting web site.

Registration forms appear in this issue of the CMS Notes, and are available on the meeting web site, which will also provide on-line forms for registration and submission of abstracts.

Public Lecture

Moshe Milevsky (Schulich School of Business, York University)

CSHPM Plenary Speaker

Len Berggren (Simon Fraser University)

CMS Plenary Speakers

Keith Devlin (Stanford University)

Dan Freed (University of Texas at Austin)

Robert McCann (University of Toronto)

Andrei Okounkov (Princeton University)

Gilles Pisier (Université Paris 6, Texas A&M University)

Ken Ribet (University of California at Berkeley)

Prizes and Awards

CMS Krieger-Nelson

Barbara Lee Keyfitz (Fields Institute, University of Houston)

CMS Jeffery-Williams

Edward Bierstone, Pierre Milman (University of Toronto)

CMS Excellence in Teaching

Philip Loewen (University of British Columbia)

Contributed Papers Session

Org: Peter Hoffman (Waterloo)

Contributed papers of 20 minutes duration are invited.

Abstracts for contributed papers should be prepared as specified below. For an abstract to be eligible, the abstract, the contributor's registration form, and payment of fees have to be received before April 10, 2005. To assist the organizers, please include the Primary AMS Classification (www.ams.org/msc/) and specify your wish to participate in the contributed papers session.

There will be a maximum of 20 papers in this session.

Business Meetings

The CMS and the CSHPM will be holding the following business meetings:

The CMS Executive Committee Meeting will be on Thursday, June 2, from 6:00 to 10:00 p.m., at the Waterloo Inn.

The Development Group Luncheon will be held on Friday, June 3, from 11:00 a.m. to 1:00 p.m., at the Waterloo Inn.

The CMS Board of Directors Meeting will be held on Friday, June 3, from 1:30 to 6:30 p.m., at the Waterloo Inn.

The CMS Annual General Meeting will be held on Saturday, June 4, from 12:15 – 1:45 p.m. at the University of Waterloo. Lunch will be provided. All CMS members are invited to attend.

The CSHPM Annual General Meeting will be held on Saturday, June 4, from 12:15 – 1:45 p.m. at the University of Waterloo. Lunch will be provided. All CSHPM members are invited to attend.

Additional information will be provided in later announcements and on the meeting website, where a detailed schedule will also be available.

Social Events

The Welcoming Reception will be held on Friday, June 3, from 8:00 to 10:00 p.m., in the Great Hall of the Davis Centre at the University of Waterloo and will be preceded by a plenary lecture.

The Banquet will take place in the Centre for International Governance Innovation (the former Seagram's Museum) on Saturday, June 4, commencing at 7:00 pm, preceded by a cash bar at 6:00 p.m. Tickets to this event are available at \$60.00 each.

The Participants' Luncheon will be held on Sunday, June 5, from 12:15 – 2:15 p.m. in the Festival Room, South Campus Hall, at the University of Waterloo. A ticket to this luncheon is included in all registration fee categories.

The UW Alumni Luncheon will be held on Saturday, June 4, from 12:15 – 1:45 p.m. in the MC 5158 Room, at the University of Waterloo.

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

A detailed schedule will be available on the meeting web site.

Exhibits

Exhibits: Exhibits will be open from 9:30 a.m. to 4:00 p.m. on June 4 and 5 in the Davis Centre, Room 1301, at the University of Waterloo.

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

CMS Membership Booth and Book Display: We invite participants to visit the CMS Membership Booth and Book Display in the Davis Centre, Room 1301, at the University of Waterloo. A representative will be available from 8:00 a.m. to 5:00 p.m. on June 4 and 5 and from 9:00 a.m. to 4:00 p.m. on June 6 to answer questions about membership, publications, and other programs.

Information Table: In response to members' suggestions, this table will be set up in the registration area for information of interest to participants. Please send a copy of your announcement to the CMS Meetings Coordinator, 577 King Edward, Ottawa, Ontario, Canada K1N 6N5, facsimile (613) 565-1539, E-mail meetings@cms.math.ca.

All announcements require prior approval. Once approved, the participant may display up to 100 copies of the announcement. The participant is responsible for providing all copies for display and for removing any remaining copies before 3:00 p.m. on the last day of the

meeting. After that time, all remaining material will be discarded.

Announcements may not be posted in the registration or meeting area. Personal distribution of announcements and announcements of events competing in time or place with the meeting program are not permitted.

This table is not meant for material promoting products or services for sale. Those wishing to promote products for sale should contact the Meetings Coordinator for information on the Joint Exhibit.

Submission of Abstracts

Abstracts of talks will be published on-line and in the meeting programme.

Speakers are asked to submit their abstracts as soon as possible. The deadline for submission of abstracts is April 10, 2005. The organizers appreciate the cooperation of all speakers in observing this important deadline.

Abstracts must be submitted by using the on-line form.

Abstracts for contributed papers should be sent to cp-abstracts-s05@cms.math.ca. To better assist organizers, please include the 2000 AMS Subject Classification (www.ams.org/msc/).

Speakers can also submit their abstracts by sending an E-mail to abstracts-s05@cms.math.ca. The subject line should contain the session name; the abstract should be copied into the body of the mail, using LaTeX coding if possible, adding the speaker's name, affiliation, email address and title of talk.

Registration

The registration form is also available from:

CMS Executive Office
577 King Edward, Ottawa, Ontario CANADA K1N 6N5
Tel: 613-562-5702, Fax: 613-565-1539
Email: meetings@cms.math.ca

Payment for pre-registration may be made by cheque, or by VISA or MasterCard. Although registration fees are given in Canadian dollars, participants may send cheques in US dollars by contacting their financial institution for the current exchange rate.

Please note that payment must be received in Ottawa on or before May 1 in order to qualify for reduced rates. In order for your payment to be processed before the meeting, it should be received by May 31. Receipts will be provided at the meeting.

	Until May 1	After May 1
Plenary/Prize/Public Lecturers	\$ 0	\$ 0
Organizers	\$ 200.00	\$ 265.00
Session Speakers	\$ 225.00	\$ 295.00
Non-Members (fee includes CMS Membership)	\$ 373.00	\$ 443.00
Members CMS/CSHPM/AMS/MAA	\$ 225.00	\$ 295.00
One-day fee	\$ 150.00	\$ 195.00
Postdocs/Students/Retired/Unemployed	\$ 100.00	\$ 130.00
Teachers (K-12, CEGEP, College)	\$ 100.00	\$ 130.00
Participants' Luncheon included	\$ 0	\$ 0
Banquet (free for plenary/prize lecturers)	\$ 60.00	\$ 60.00

CMS = Canadian Mathematical Society

CSHPM = Canadian Society for History and Philosophy of Mathematics

AMS = American Mathematical Society

MAA = Mathematical Association of America

Why Pre-register?

Wondering whether to pre-register or wait until you arrive? Here are some advantages to pre-registering.

- reduced fees for early registration until May 1
- your name appears on the list of participants on the meeting web site
- your Meeting Package is waiting for you at the reception on Friday evening
- no waiting in line early Saturday morning to process your registration!
- banquet tickets are available now but may no longer be available on site

For all these reasons, we encourage you to pre-register, whether it be before or after the early registration deadline. If you'd like to pre-register and enjoy the above benefits, please visit our web site to use our online forms.

Refund Policy

Participants wishing to cancel their registration must notify the CMS Executive Office in writing before May 31 to receive a refund less a \$40 processing fee. Those whose contributed paper has not been accepted will upon request be fully refunded.

Do you qualify for free CMS membership?

An AMS or a MAA member who registers at a semi-annual meeting of the CMS and who is not a member of the CMS, is eligible for a one-time only, one-year free membership in the CMS.

If you qualify, please visit the CMS booth to complete a membership application form. Please provide proof of current AMS or MAA membership. This offer applies to new members only.

Accommodation

It is recommended that bookings be made early in order to avoid disappointment. All participants must make their own reservations. Blocks of rooms will be held at the locations given below until the date indicated. Reservations made after this date will be on a space available basis. Rates are per room per night and are quoted in Canadian dollars. The conference rate is usually available up to three days before and after the meeting; please quote the Group code. Reservations must be guaranteed by a one-night deposit or a major credit card.

Waterloo Inn Hotel and Conference Centre

Booking deadline: April 26, 2005

475 King Street North, Waterloo, Ontario, Canada, N2J 2Z5

Applicable taxes: 7% GST, 5% PST,

Group code: Canadian Mathematical Society

Phone: 519-884-0220, toll free: 1-800-361-4708

Fax: 519-884-0321

Email: watinn@waterlooinn.com

Parking: Free

Rates: \$120.00 Single or double occupancy; Suites from \$199.00 to \$369.00

Best Western Hotel St. Jacob

Booking deadline: May 2, 2005

50 Benjamin Road East, Waterloo, Ontario, Canada, N2V 2J9

Applicable taxes: 7% GST, 5% PST

Group code: 102619, Canadian Mathematical Society

Phone: 519-884-9295; toll-free 1-800-972-5371

Fax: 519-884-2532

Parking: Free

Rates: \$114.00 Single and double occupancy; \$124.00 Triple occupancy; \$134.00 Quadruple occupancy

Price includes breakfast buffet

Comfort Inn

Booking deadline: May 1, 2005
190 Weber St. N., Waterloo, Ontario, Canada, N2J 3H4
Applicable taxes: 7 % GST, 5% PST
Phone: 519-747-9400, Fax: 519-747-2134
Parking: Free
Rates: \$85.00 Quadruple occupancy
Price includes one \$5.00 voucher for the Golden Griddle Restaurant (Phone: 519-885-5123) per room per night.

Ron Eydt Village (University Residence)

University of Waterloo
Box 16610, Waterloo, Ontario, Canada, N2J 4C1
Phone: 519-884-5400, Fax: 519-746-7599
Parking: Free
Rates: \$53.76 Single occupancy (all taxes included)
\$36.96 Double occupancy, per person (all taxes included)

When making your reservation, please clarify payment and cancellation policies as these vary from hotel to hotel. You should get a confirmation number for future reference.

Additional information regarding accommodation choices will be posted to the meeting web site as it becomes available.

Child Care

Information regarding available child care may be provided by the meeting hotels. Advance research and arrangements are recommended. Please contact the hotels directly to make enquiries.

Travel

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

- University of Waterloo (www.uwaterloo.ca/)
- Tourism Waterloo (www.kw-visitor.on.ca/)
- Ontario Travel (www.ontariotravel.net/)
- Canada Weather Forecast
(weatheroffice.ec.gc.ca/canada_e.html)

Travel Grants

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

This letter should be sent before April 10, 2005 to gradtravel-s05@cms.math.ca. Applicants will be notified early in May of the funding decision.

If successful, the student will receive a cheque for reimbursement of expenses after the meeting and upon completion and submission of the standard Travel Expense Claim Form, along with appropriate original receipts.

For more information, please contact the Meeting Committee at gradtravel-s05@cms.math.ca.

Acknowledgements

Support from the following is gratefully acknowledged. Additional information regarding support for this meeting will be posted to the meeting web site as it becomes available.

- Faculty of Mathematics, University of Waterloo
- le Centre de Recherches Mathématiques
- The Fields Institute for Research in Mathematical Sciences
- Institute for Quantum Computing (IQC)
- University of Guelph
- MITACS
- Pacific Institute for the Mathematical Sciences

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

THE 2004 CRM-FIELDS PRIZE AWARDED TO DAVID BOYD, University of British Columbia

January 2005. - The directors of the Centre de recherches mathématiques (CRM), of l'Université de Montréal, François Lalonde, and the Fields Institute for Research in Mathematical Sciences, Barbara Keyfitz, are pleased to announce the awarding of the CRM-Fields Prize for 2005 to Professor David Boyd in recognition of his exceptional achievement and work in analytic number theory.

The Centre de recherches mathématiques and The Fields Institute established the CRM-Fields Prize in 1994 to recognize exceptional research in the mathematical sciences. The recipient is chosen by a selection committee made up of members of the Advisory Committee of the CRM and the Scientific Advisory Panel of the Fields Institute.

David Boyd, this year's recipient, is one of Canada's leading number theorists. He has made seminal contributions to analytic number theory, noteworthy among which are his explorations of the deep connections between the Mahler measure of polynomials and special values of their associated L-functions.

Professor Boyd received his B.Sc. from Carleton University in 1963, and his M.A. and Ph.D. from the University of Toronto in 1964 and 1966. He has taught at the University of Alberta and the California Institute of Technology, and has been at UBC since 1971 where he is currently Full Professor. He is a winner of the E.W.R. Steacie Prize, a Fellow of the Royal Society of Canada, and has won both the Canadian Mathematical Society's Coxeter-James and Jeffery-Williams Prizes. His service to the Canadian mathematical community includes terms as vice-president of the Canadian Mathematical Society, chair of the NSERC Mathematics grant selection committee, and Acting Director of the Pacific Institute for the Mathematical Sciences.

Previous recipients of the prize are H.S.M. (Donald) Coxeter, George A. Elliot, James Arthur, Robert V. Moody, Stephen A. Cook, Israel Michael Sigal, William T. Tutte, John B. Friedlander, John McKay, Edwin Perkins, and Donald A. Dawson.

RÉUNION D'ÉTÉ 2005 DE LA SMC ET DE LA SCHPM

Université de Waterloo, Waterloo (Ontario) 4-6 juin 2005

Au nom de l'Université de Waterloo, le département de mathématiques pures invite la communauté mathématique à la Réunion d'été 2005 de la Société mathématique du Canada (SMC) et de la Société canadienne d'histoire et de philosophie des mathématiques (SCHPM).

Conformément au format habituel, la Réunion d'été comprendra une grande diversité de sessions, une session de communications libres, des conférenciers pléniers, des conférences de lauréats ainsi qu'une conférence populaire.

La plupart des activités et toutes celles du programme scientifique se dérouleront à l'Université de Waterloo. Vous trouverez l'information la plus récente sur les programmes, y compris les horaires, sur le site de la Réunion.

Vous trouverez le formulaire d'inscription dans ce numéro des Notes de la SMC. Il sera aussi publié sur le site de la Réunion, tout comme les formulaires électroniques d'inscription et de présentation des résumés.

Conférence populaire

Moshe Milevsky (Schulich School of Business, York)

Conférencier plénier de la SCHPM

Len Berggren (Simon Fraser)

Conférenciers pléniers de la SMC

Keith Devlin (Stanford)

Dan Gratac (Texas - Austin)

Robert McCann (Toronto)

Andrei Okounkov (Princeton)

Gilles Pisier (Paris 6, Texas A&M)

Ken Ribet (California - Berkeley)

Prix

Prix Krieger-Nelson de la SMC

Barbara Lee Keyfitz (Institut Fields, Houston)

Prix Jeffery-Williams de la SMC

Edward Bierstone, Pierre Milman (Toronto)

Prix d'excellence en enseignement de la SMC

Philip Loewen (Université de Colombie-Britannique)

Communications libres

Org. : Peter Hoffman (Waterloo)

Nous lançons un appel de communications libres de 20 minutes chacune.

Prière de préparer les communications libres de la manière décrite ci-dessous. Les résumés devront nous parvenir au plus tard le 10 avril 2005, accompagnés du formulaire et des droits d'inscription du conférencier. Pour faciliter la tâche des organisateurs, veuillez indiquer la classification de sujet de l'AMS (www.ams.org/msc/) et préciser que vous souhaitez présenter une communication libre.

Un maximum de 20 communications libres seront acceptées.

Séances de travail

La SMC et la SCHPM tiendront les séances de travail suivantes à l'occasion de cette Réunion :

Le Comité exécutif de la SMC tiendra une réunion le jeudi 2 juin de

18 h à 22 h au Waterloo Inn.

Le lunch du Groupe de développement de la SMC aura lieu de 11 h à 13 h le vendredi 3 juin au Waterloo Inn.

La réunion du Conseil d'administration de la SMC aura lieu de 13 h 30 à 18 h 30 le vendredi 3 juin au Waterloo Inn.

L'assemblée générale annuelle de la SMC aura lieu le samedi 4 juin de 12 h 15 à 13 h 45 à l'Université de Waterloo. Un lunch sera servi. Tous les membres de la SMC sont invités.

L'assemblée générale annuelle de la SCHPM se tiendra le samedi 4 juin de 12 h 15 à 13 h 45 à l'Université de Waterloo. Un lunch sera servi. Tous les membres de la SCHPM sont invités.

Vous obtiendrez de plus amples renseignements dans les prochaines annonces et sur le site de la Réunion, où un horaire détaillé sera également publié.

Activités sociales

La réception d'accueil se tiendra le vendredi 3 juin de 20 h à 22 h dans la grande salle (Great Hall) du Centre Davis de l'Université de Waterloo et sera précédée d'une conférence plénière.

Le banquet aura lieu au Centre for International Governance Innovation (l'ancien musée Seagram) le samedi 4 juin, à compter de 19 h, et sera précédé d'une réception avec bar payant à partir de 18 h. On peut se procurer des billets au coût de 60 \$ chacun.

Le lunch des participants se tiendra le dimanche 5 juin de 12 h 15 à 14 h 15 dans la salle du Festival (South Campus Hall), à l'Université de Waterloo. Ce repas est compris dans toutes les catégories d'inscription.

Le lunch des anciens de Waterloo se tiendra le samedi 4 juin de 12 h 15 à 13 h 45 dans la salle MC 5158, à l'Université de Waterloo.

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

L'horaire détaillé sera publié sur le site de la Réunion.

Exposants

Salon des exposants : Le salon des exposants sera ouvert de 9 h 30 à 16 h les 4 et 5 juin au Centre Davis, salle 1301, à l'Université de Waterloo.

Exposition conjointe : On y présentera des produits de maisons d'édition et d'autres entreprises et organismes non représentés à la Réunion. On trouvera des bons de commande sur place, que la Société transmettra aux entreprises concernées après la Réunion. Les livres et autres produits qui seront présentés à cette exposition seront offerts à l'université hôte.

Comptoir d'adhésion et exposition de livres de la SMC : Nous vous invitons à visiter le comptoir d'adhésion et l'exposition de livres de la SMC au Centre Davis, salle 1301, à l'Université de Waterloo. Un représentant sera sur place de 8 h à 17 h les 4 et 5 juin, et de 9 h à 16 h le 6 juin pour fournir des renseignements sur l'adhésion, les publications et autres programmes.

Kiosque de renseignements : À la demande de nos membres, un kiosque de renseignements sera aménagé dans l'aire d'inscription. Prière de faire parvenir une copie de votre annonce à la coordinatrice des Réunions de la SMC au 577, avenue King-Edward, Ottawa (Ontario), K1N 6N5, fax : (613) 565-1539, courriel : reunions@smc.math.ca.

RÉUNION D'ÉTÉ 2005 DE LA SMC ET DE LA SCHPM *continued*

Toute annonce doit être approuvée au préalable. Les participants pourront apporter jusqu'à 100 copies de leur annonce approuvée. Il leur incombe de fournir eux-mêmes les copies et de récupérer celles qui seront restées sur la table avant 15 h le dernier jour de la Réunion; autrement, elles seront détruites.

Il est interdit d'afficher des annonces dans l'aire d'inscription ou dans les salles de réunion, ou de distribuer des annonces aux passants. Les annonces d'événements entrant en conflit avec le programme de la Réunion ne seront pas acceptées.

Le kiosque n'est pas destiné à promouvoir des biens et services achetables. Ceux qui désirent faire la promotion de tels produits doivent communiquer avec la coordinatrice des expositions pour obtenir des renseignements sur l'exposition conjointe.

Envoi de résumés

Les résumés des communications seront publiés en ligne et dans le programme de la Réunion.

Les conférenciers sont priés de remettre leur résumé le plus tôt possible. La date limite est fixée au 10 avril 2005. Les organisateurs remercient les conférenciers de bien vouloir respecter cette importante échéance.

Les résumés doivent être envoyés à l'aide du formulaire électronique. Faire parvenir les résumés des communications libres à c1-resumes-e05@smc.math.ca. Pour faciliter la tâche des organisateurs, veuillez préciser la classification de sujets AMS 2000 (www.ams.org/msc/).

Les conférenciers peuvent aussi envoyer leur résumé par courriel à resumes-e05@smc.math.ca. Le nom de la session devra figurer dans la ligne « sujet » ou « objet » du message, et le résumé (en LaTeX si possible), le nom du conférencier, son affiliation, son adresse de courriel et le titre de la conférence, dans le corps du message.

Inscription

Un formulaire d'inscription est aussi disponible auprès de la SMC :

Bureau administratif de la SMC
577, avenue King-Edward, Ottawa (Ontario) CANADA K1N 6N5
Tél.: 613-562-5702, Fax: 613-565-1539, reunions@smc.math.ca

Les frais (en devises canadiennes) sont payables par chèque, VISA ou MasterCard. Les paiements en devises américaines seront acceptés, mais nous vous demandons de contacter votre institution financière pour prendre connaissance du taux de change en vigueur.

Le paiement doit nous parvenir à Ottawa au plus tard le 1er mai pour que vous ayez droit aux tarifs réduits. Pour que votre inscription soit traitée avant la Réunion, votre paiement doit nous parvenir au plus tard le 31 mai. Les reçus seront remis à la Réunion.

	Jusqu'au 1er mai	Après le 1er mai
Conférenciers (pléniers /prix/populaire)	0 \$	0 \$
Organisateurs	200,00 \$	265,00 \$
Conférenciers	225,00 \$	295,00 \$
Non-membres (adhésion à la SMC comprise)	373,00 \$	443,00 \$
Membres SMC/SCHPM/AMS/MAA	225,00 \$	295,00 \$
Frais d'une journée	150,00 \$	195,00 \$
Postdocs/Retraités	100,00 \$	130,00 \$
Enseignants (prim. /sec. /cégep)/étudiants/sans emplois	100,00 \$	130,00 \$
Lunch des participants inclus	0 \$	0 \$
Banquet (gratuit pour conf. pléniers et lauréats)	60,00 \$	60,00 \$

SMC = Société mathématique du Canada

SCHPM = Société canadienne d'histoire et de philosophie des mathématiques

AMS = American Mathematical Society

MAA = Mathematical Association of America

À quoi sert de s'inscrire à l'avance?

Vous vous demandez si vous devriez vous inscrire à l'avance ou le faire sur place? Voici quelques-uns des avantages de la préinscription :

- Tarifs réduits pour les personnes qui s'inscrivent au plus tard le 1er mai.
- Votre nom figurera dans la liste des participants sur le site de la Réunion.
- Votre trousse d'inscription sera déjà prête à votre arrivée le vendredi soir.
- Vous n'aurez pas besoin de faire la file pour vous inscrire à la première heure samedi matin!
- Les billets pour le banquet sont en vente maintenant, mais il pourrait ne plus en rester sur place.

Pour toutes ces raisons, nous vous incitons à vous inscrire à l'avance, que ce soit avant ou après la date limite de préinscription. Pour profiter des avantages de la préinscription, utilisez les formulaires électroniques offerts sur notre site web.

Politique de remboursement

Les participants qui désirent annuler leur inscription doivent en aviser le bureau administratif de la SMC par écrit avant le 31 mai pour se voir rembourser leurs frais d'inscription (moins 40 \$). Les participants dont les communications libres n'auront pas été acceptées seront remboursés intégralement sur demande.

Êtes-vous admissible à une adhésion gratuite à la SMC?

Les membres de l'AMS et de la MAA qui s'inscrivent à une Réunion semestrielle de la SMC et qui ne sont pas membres de la SMC sont admissibles à une année d'adhésion gratuite à la SMC (offre unique).

Si vous êtes admissible, présentez-vous au kiosque de la SMC pour remplir une demande d'adhésion. Veuillez fournir une preuve d'adhésion à l'AMS ou à la MAA. Cette offre est destinée aux nouveaux membres seulement.

Hébergement

Nous recommandons fortement aux participants de réserver à l'avance. Tous les participants doivent faire leurs propres réservations. Des chambres ont été retenues aux endroits ci-dessous jusqu'aux dates précisées. Après cette date, les hôtels ne prendront vos réservations que s'il reste des chambres et demanderont les tarifs affichés. Les tarifs sont par nuit, par personne, et sont indiqués en devises canadiennes. Les tarifs préférentiels s'appliquent généralement aux trois jours qui précédent et qui suivent la Réunion. Au moment de réserver, veuillez donner le code de groupe. Toute réservation doit être garantie par le paiement d'une nuit ou par une carte de crédit reconnue.

Waterloo Inn Hotel and Conference Centre

Date limite de réservation : 26 avril 2005

475 King Street North, Waterloo, Ontario, Canada, N2J 2Z5

Taxes : 7 % TPS, 5 % taxe provinciale

Code de groupe : Canadian Mathematical Society

Téléphone : 519-884-0220, sans frais : 1-800-361-4708

Fax : 519-884-0321

Courriel : watinn@waterlooinn.com

Stationnement : Gratuit

Tarifs : 120 \$, 1 ou 2 personnes; Suites : de 199 \$ à 369 \$

Best Western Hotel St. Jacob

Date limite de réservation : 2 mai 2005

50 Benjamin Road East, Waterloo, Ontario, Canada, N2V 2J9

Taxes : 7 % TPS, 5 % taxe provinciale

RÉUNION D'ÉTÉ 2005 DE LA SMC ET DE LA SCHPM *continued*

Code de groupe : 102619, Canadian Mathematical Society
Téléphone : 519-884-9295; Sans frais : 1-800-972-5371
Fax : 519-884-2532 ; Stationnement : Gratuit
Tarifs : 114 \$ 1 ou 2 personnes ; 124 \$ 3 personnes ;
134 \$ 4 personnes ; *Le prix comprend le buffet-déjeuner*

Comfort Inn

Date limite de réservation : 1er mai 2005
190 Weber St. N., Waterloo, Ontario, Canada, N2J 3H4
Taxes : 7 % TPS, 5 % taxe provinciale
Téléphone : 519-747-9400 ; Fax : 519-747-2134
Stationnement : Gratuit
Tarifs : 85 \$ 4 personnes ; *Le prix comprend un coupon de 5 \$ pour le restaurant Golden Griddle (Téléphone : 519-885-5123) par chambre, par nuit.*

Ron Eydt Village (résidences universitaires)

Université de Waterloo, Box 16610,
Waterloo, Ontario, Canada, N2J 4C1
Téléphone : 519-884-5400 ; Fax : 519-746-7599
Stationnement : Gratuit

Tarifs : 53,76 \$ 1 personne (taxes comprises)
36,96 \$ 2 personnes (par personne) (taxes comprises)

Au moment de faire votre réservation, n'oubliez pas de vérifier les modalités de paiement et d'annulation, car celles-ci varient d'un établissement à l'autre. Demandez un numéro de confirmation pour toute communication ultérieure.

Nous publierons sur le site de la Réunion tout nouveau renseignement concernant l'hébergement dès que nous le recevrons.

Services de garde

Des renseignements sur les services de garde seront sans doute fournis par les hôtels prévus pour la Réunion. Nous vous recommandons de faire vos démarches et vos réservations à l'avance. Veuillez communiquer directement avec les hôtels si vous avez des questions.

Déplacements

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

- Université de Waterloo (www.uwaterloo.ca/)
- Tourisme Waterloo (www.kw-visitor.on.ca/)
- Tourisme Ontario (www.ontariotravel.net/)
- Météo Environnement Canada (weatheroffice.ec.gc.ca/canada_e.html)

Subventions

Les étudiants diplômés du Canada ou de l'étranger ont accès à un fonds limité pour financer une partie de leurs frais de déplacement et de séjour. La préférence est toutefois accordée aux étudiants canadiens. Toute demande de financement doit être accompagnée d'une lettre du superviseur de l'étudiant ou de la personne responsable des études supérieures de son département, dans laquelle il ou elle indiquera le nom de l'étudiant, son domaine et son niveau d'études, en quoi la Réunion sera profitable à l'étudiant, si l'étudiant présentera une communication et si l'étudiant a accès à d'autres sources de financement.

Votre lettre devra nous parvenir au plus tard le 10 avril 2005 (gradtravel-s05@smc.math.ca). Les décisions seront annoncées au début de mai.

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

Pour de plus amples renseignements, communiquer avec le comité de coordination (gradtravel-s05@smc.math.ca).

Remerciements

Nous remercions les organismes ci-dessous de leur soutien financier. Nous publierons de plus amples renseignements sur le financement de la Réunion dès qu'ils nous parviendront.

- La faculté de mathématiques de l'Université de Waterloo
- Le Centre de recherches mathématiques
- L'Institut Fields
- L'Institut du calcul quantique
- L'Université de Guelph
- Le réseau MITACS
- L'Institut Pacific

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

LE LAURÉAT DU PRIX CRM-FIELDS 2004 est DAVID BOYD, University of British Columbia

Janvier 2005. - Le directeur du Centre de recherches mathématiques (CRM) de l'Université de Montréal, M. François Lalonde et la directrice du *Fields Institute for Research in Mathematical Sciences*, Mme Barbara Keyfitz, sont fiers d'annoncer que le prix CRM-Fields 2004 est octroyé au professeur David Boyd en reconnaissance de l'excellence de sa contribution à la recherche en théorie analytique des nombres.

Ce prix a été créé par les deux centres en 1994 afin de souligner l'excellence de recherches en sciences mathématiques. Le récipiendaire est choisi par un comité de sélection formé à partir du Comité consultatif du CRM et du Comité avisoir scientifique du Fields Institute.

Le récipiendaire de cette année, David Boyd, est une figure dominante de la théorie des nombres au Canada. Il a contribué de façon déterminante au développement de la théorie analytique des nombres, notamment dans l'exploration des connexions profondes entre la mesure de Mahler des polynômes et les valeurs particulières des fonctions L associées.

Le professeur Boyd a obtenu un baccalauréat en sciences à l'Université Carleton (1963) et ses diplômes de M.A. et Ph.D. de l'Université de Toronto (1964 et 1966 respectivement). Il a enseigné à l'Université de l'Alberta et au *California Institute of Technology* avant de se joindre à l'Université de Colombie-Britannique en 1971, où il est présentement professeur titulaire. Il a reçu le Prix E.W.R. Steacie et est membre élu de la Société Royale du Canada. Il est récipiendaire des prix Coxeter-James et Jeffery-Williams de la Société mathématique du Canada. Parmi ses contributions à la communauté mathématique canadienne, mentionnons qu'il a été vice-président de la Société mathématique du Canada, président du comité de sélection du CRSNG en mathématiques, et directeur par intérim du Pacific Institute for the Mathematical Sciences.

Les professeurs H.S.M. (Donald) Coxeter, George A. Elliot, James Arthur, Robert V. Moody, Stephen A. Cook, Israel Michael Sigal, William T. Tutte, John B. Friedlander, Edwin Perkins, John McKay, et Donald A. Dawson ont été les récipiendaires précédents du Prix CRM-Fields.

CMS/CSHPM SUMMER 2005 MEETING RÉUNION D'ÉTÉ 2005 DE LA SMC ET DE LA SCHPM

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

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

Automatic Sequences and Related Topics

Suites automatiques et sujets reliés

Org: Jean-Paul Allouche (Orsay, France), Jeffrey Shallit (Waterloo)

Boris Adamczewski (CNRS, Institut Girard Desargues, Lyon, France)
Jean-Paul Allouche (CNRS, Orsay, France)
Jason Bell (Michigan)
Valerie Berthe (LIRMM, Montpellier, France)
James Currie (Winnipeg)
Anna Frid (Sobolev Inst., Novosibirsk, Russia)
Kiran Kedlaya (MIT)
Xavier Le Breton (LRI, France)
Brendan Lucier (Waterloo)
Morteza Mohammad-Noori (Iran)
Narad Rampersad (Waterloo)
Michel Rigo (Liege, Belgium)
Kalle Saari (Turku, Finland, Waterloo)

Combinatorics and Geometry

Combinatoire et géométrie

Org: Ian Goulden (Waterloo)

Complex Variables / Variables complexes

Org: Thomas Bloom (Toronto), Paul Gauthier (Montreal)

Gautam Bharali (Michigan)
Dan Coman (Syracuse)
Ian Graham (Toronto)
Daniel Jupiter (Texas A&M)
Finnur Larusson (Western)
Eugene Poletsky (Syracuse)
Rasul Shafikov (Western)
Eduardo Zeron (Mexico)

Discrete and Computational Geometry

Géométrie discrète et computationnelle

Org: Leroy J Dickey (Waterloo), Asia Ivic Weiss (York)

Karoly Bezdek (Calgary)
T. Bisztricky (Calgary)
J. Bokowski (Darmstadt)
R. Dawson (St. Mary's)
Bob Erdahl (Queen's)
W. Finbow-Singh (Acadia)
I. Hubard (York)
L. Moshe (York)
D. Pronk (Dalhousie)
E. Schulte (Northeastern)
T. Taylor (Dalhousie)
W. Whitely (York)

Dynamical Systems / Systèmes dynamiques

Org: Sue Ann Campbell (Waterloo), Yuming Chen (Wilfrid Laurier), Huaiping Zhu (York)

Julien Arino (McMaster)
Elena Braverman (Calgary)
Sue Ann Campbell (Waterloo)
Yuming Chen (WLU)
Monica Cojocaru (Guelph)
Bill Langford (Guelph)
M. Y. Li (Alberta)
Pierre Magal (Le Havre, France)
J. Muldowney (Alberta)
Christiane Rousseau (Montreal)
Gail Wolkowicz (McMaster)
Jianshe Yu (Guangzhou, P.R.China)
Pei Yu (Western)
Huaiping Zhu (York)

Exploratory Classroom Problems in Calculus

Problèmes d'exploration de salle de classe en calcul

Org: Peter Taylor (Queen's)

Functional Equations and Their Applications

Équations fonctionnelles et leurs applications

Org: Janos Aczel, Che-Tat Ng (Waterloo)

Janos Aczel (Waterloo)
John Baker (Waterloo)
Tom Davison (McMaster)
Bruce Ebanks (Mississippi State)
Jean-Claude Falmagne (California, Irvine)
Pal Fischer (Guelph)
Konrad Heuvers (Michigan Technological)
Duncan Luce (California, Irvine)
Tony Marley (McGill, Victoria)
Che Tat Ng (Waterloo)
Thomas Riedel (Louisville)
Prasanna Sahoo (Louisville)
Karl Wagner (Tennessee-Knoxville)
Dilian Yang (Waterloo)

ABSTRACT DEADLINE

IS APRIL 10, 2005

CMS/CSHPM SUMMER 2005 MEETING RÉUNION D'ÉTÉ 2005 DE LA SMC ET DE LA SCHPM

General Topology and Its Applications

Topologie générale et ses applications

Org: E.D. Tymchatyn (Saskatoon), A. Karassev, M. Tuncali, V. Valov (Nipissing)

Taras Banakh (Nipissing, Ivan Franko, Lviv, Ukraine)
Nikolay Brodsky (Tennessee, Knoxville)
Maxim Burke (Prince Edward Island)
Alex Chigogidze (North Carolina, Greensboro)
Dale Daniel (Lamar, Texas)
Dikran Dikranjan (Udine, Italy)
Jerzy Dydak (Tennessee, Knoxville)
Vitali Fedorchuk (Moscow State, Russia)
Gary Gruenhage (Auburn, Alabama)
Valentin Gutev (Natal, South Africa)
Kazuhiro Kawamura (Tsukuba, Japan)
Krystyna Kuperberg (Auburn, Alabama)
John C. Mayer (Alabama, Birmingham)
Chris Mouron (Rhodes College, Tennessee)
Lex Oversteegen (Alabama, Birmingham)
Jan Pelant (Math. Inst. of Academy of Sciences, Czech Republic)
Vladimir Pestov (Ottawa)
Janusz R. Prajs (California State, Sacramento)
Brian Raines (Baylor, Texas)
Juris Steprans (York)
Paul Szeptycki (York)
Walter Tholen (York)

Geometric Topology / Topologie géométrique

Org: Hans Boden (McMaster), Doug Park, Mainak Poddar (Waterloo)

Tara Brendle (Cornell)
Olivier Collin (UQAM)
Mariyant Ionel (McMaster)
Elmas Irmak (Michigan)
Ernesto Lupercio (CINVESTAV del Instituto Politecnico Nacional)
Joseph Masters (New York at Buffalo)
Brendan Owens (Cornell)
Stephan Tillmann (UQAM)
Stefano Vidussi (Kansas State)
Mei-Lin Yau (Michigan State)

History and Philosophy of Mathematics

Histoire et philosophie des mathématiques

(CSHPM Session SCHPM) Org: Duncan Melville (St. Lawrence)

Francine Abeles (Kean)
Amy Ackerberg-Hastings (Maryland)
Robert Bradley (Adelphi)
David DeVidi (Waterloo)
Thomas Drucker (Wisconsin, Whitewater)
Roger Godard (Royal Military College)
Alexander Jones (Toronto)
Amirouche Moktefi (Strasbourg)
David Orenstein (Toronto)
Jim Tattersall (Providence College)
Robert Thomas (Manitoba)
Alexei Volkov (UQAM)

History of Mathematics from Medieval Islam to Renaissance Europe

Histoire des mathématiques de l'Islam médiéval à l'Europe de la Renaissance

(CSHPM Session SCHPM) Org: Rob Bradley (Adelphi), Glen van Brummelen (Bennington College)

Christopher Baltus (New York at Oswego)
Glen van Brummelen (Bennington College)
Odile Kouteynikoff (Paris VII Denis Diderot)

Invariant Theory and Differential Geometry

La théorie des invariants et la géométrie différentielle

Org: Ray MacLenaghan (Waterloo), Roman Smirnov (Dalhousie)

Stephen Anco (Brock)
Mark Chanochowicz (Waterloo)
Michael Eastwood (Adelaide)
Joshua Horwood (Cambridge)
Ernie Kalnins (Waikato)
Niky Kamran (McGill)
Willard Miller, Jr. (Minnesota)
Robert Milson (Dalhousie)
Anatoly Nikitin (Inst. of Mathematics, Kiev)
Peter Olver (Minnesota)
Dennis The (McGill)
Pavel Winternitz (Montreal)
Thomas Wolf (Brock)
Jin Yue (Dalhousie)

L-Functions and Algebraic Curves

Fonctions L et courbes algébriques

Org: Yu-Ru Liu, David McKinnon, Michael Rubinstein (Waterloo)

Imin Chen (Simon Fraser)
Brian Conrey (Oklahoma State)
Chantal David (Concordia)
John Friedlander (Toronto)
Alex Ghitza (McGill)
Hershy Kisilevsky (Concordia)
Jeff Lagarias (Michigan, Ann Arbor)
Jung-Jo Lee (Queen's)
Wenzhi Luo (Ohio State)
Francesco Mezzadri (Bristol)
Steven J. Miller (Ohio State)
Kumar Murty (Toronto)
Ram Murty (Queen's)
Nina Snaith (Bristol)

DATE LIMITE DES

RÉSUMÉS

10 AVRIL 2005

CMS/CSHPM SUMMER 2005 MEETING RÉUNION D'ÉTÉ 2005 DE LA SMC ET DE LA SCHPM

Mathematical Aspects of Quantum Information

Aspects mathématiques de l'informatique quantique

Org: Daniel Gottesman (Perimeter Inst.), Achim Kempf (Waterloo), David Kribs (Guelph), Mike Mosca (Waterloo)

Hilary Carteret (Montreal)
Andrew Childs (Caltech)
J. Ignacio Cirac
(Max Planck Inst. for Quantum Optics, Garching, Germany)
Patrick Hayden (McGill)
Peter Hoyer (Calgary)
Louis Kauffman (Illinois at Chicago)
Christopher King (Northeastern)
Greg Kuperberg (UC Davis)
Debbie Leung (California Inst. of Technology)
Martin Roetteler (Waterloo)
Mary Beth Ruskai (Tufts)
Andreas Winter (Bristol)
Paolo Zanardi (Inst. for Scientific Interchange, Torino, Italy)

Mathematics from Ancient to Modern Times

Mathématiques des temps anciens aux temps modernes

Org: Richard O'Lander, Ronald Sklar (St. John's)

Mathematics of Actuarial Finance

Mathématiques financières actuarielles

Org: Tom Salisbury (York, Fields)

Mathematics of Computer Algebra and Analysis

Mathématiques de l'algèbre et de l'analyse computationnels

Org.: Keith Geddes, Mark Giesbrecht, George Labahn, Arne Storjohann (Waterloo)

Nonlinear Partial Differential Equations

Équations aux dérivées partielles non linéaires

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

Operator Algebras, Operator Spaces

and Harmonic Analysis

Algèbres d'opérateurs, espaces d'opérateurs et analyse harmonique

Org: Ken Davidson, Brian Forrest (Waterloo)

Monica Ilie (Lakehead)

Eberhard Kaniuth (Paderborn, Germany)

David Kribs (Guelph)

Anthony Lau (Alberta)

Laurent Marcoux (Waterloo)

Paul Muhly (Iowa)

Matthias Neufang (Carleton)

David Pitts (Nebraska)

Volke Runde (Alberta)

Roger Smith (TAMU)

Nicolaas Spronk (Waterloo)

Random Graphs and Their Applications

Les graphes aléatoires et leurs applications

Org: Anthony Bonato (Wilfrid Laurier), Penny Haxell, Nicholas Wormald (Waterloo)

Jozef Balogh (Ohio State)
Tom Bohman (Carnegie Mellon)
Josh Cooper (New York, Courant Inst.)
Abraham Flaxman (Carnegie Mellon)
Alan Frieze (Carnegie Mellon)
David Galvin (IAS Princeton)
Jeannette Janssen (Dalhousie)
Jeong Han Kim (Microsoft)
Michael Molloy (Toronto)
Boris Pittel (Ohio State)
Pawel Pralat (Waterloo)
Joel Spencer (New York, Courant Inst.)
Prasad Tetali (Georgia Tech)
Jacques Verstraete (Waterloo)
Van Vu (UCSD)

Representation Theory

La théorie des représentations

Org: Wentang Kuo (Waterloo)

Clifton Cunningham (Calgary)
Kyu-Kwan Lee (Toronto)
Paul Mezo (Carleton)
Fiona Murnaghan (Toronto)
Monica Nevins (Ottawa)
Wulf Rossmann (Ottawa)
Loren Spice (Michigan, Ann Arbor)
Chian-Jen Wang (Minnesota)
Wai Ling Yee (Alberta)

String Theory and Integrable Systems

Théorie des cordes et systèmes intégrables

Org: Lisa Jeffrey (Toronto), Boris Khesin (Toronto), Rob Myers (Perimeter Inst.)

Mark Adler (Brandeis)
Yuly Billig (Carleton)
Perci Deift (Courant Inst.)
Misha Gekhtman (Notre Dame)
John Harnad (Concordia)
Jacques Hurtubise (McGill)
Dmitri Korotkin (Concordia)
Igor Krichever (Columbia)
Eyal Markman (Massachusetts)
Ruxandra Moraru (Fields)
Mikhail Olshanetsky (ITEP)
Michael Shapiro (Michigan State)
Jacek Szmigielski (Saskatchewan)

CMS/CSHPM SUMMER 2005 MEETING
RÉUNION D'ÉTÉ 2005 DE LA SMC ET DE LA SCHPM

FRIDAY/VENDREDI JUNE 3	SATURDAY/SAMEDI JUNE 4	SUNDAY/DIMANCHE JUNE 5	MONDAY/LUNDI JUNE 6
	7:00 – 5:00 Registration/Inscription CMS Booth/Stand SMC 9:30 – 4:00 Exhibits/Exposants	8:00 – 5:00 Registration/Inscription CMS Booth/Stand SMC 9:30 – 4:00 Exhibits/Exposants	8:00 – 4:00 Registration/Inscription CMS Booth/Stand SMC
	8:30 – 9:00 Opening/Ouverture		
	9:00 – 9:50 Ken Ribet Plenary Lecture Conférence principale	9:00 – 9:50 Gilles Pisier Plenary Lecture Conférence principale	9:00 – 9:50 Andrei Okounkov Plenary Lecture Conférence principale
		9:50 – 10:15 Break/Pause	
11:00 – 1:00 Development Group Luncheon Lunch du groupe de développement (Waterloo Inn)	10:15 – 12:15 Sessions	10:15 – 12:15 Sessions	10:15 – 12:15 Sessions
	12:15 – 1:45 CMS Annual General Meeting CSHPM Annual General Meeting UW Alumni Luncheon	12:15 – 2:15 Participants' Luncheon Lunch des participants	12:15 – 1:45 Lunch (no event scheduled/libre)
1:30 – 6:30 Board of Directors Meeting Réunion du conseil d'administration de la SMC (Waterloo Inn)	1:45 – 2:35 Barbara Lee Keyfitz CMS Krieger Nelson Prize Lecture	2:25 – 3:35 Edward Bierstone Pierre Milman CMS Jeffrey Williams Award Lecture	1:45 – 2:35 Dan Freed Plenary Lecture Conférence principale
	2:45 – 3:35 Robert McCann Plenary Lecture Conférence principale		2:45 – 3:35 Len Berggren CSHPM Plenary Lecture SCHMP Conférence principale
		3:35 – 4:00 Break/Pause	
	4:00 – 5:30 Sessions	4:00 – 6:00 Sessions	4:00 – 6:30 Sessions
	6:00 – 7:00 Reception (cash bar) Réception (bar payant)	6:30 – 7:00 Reception (cash bar) Réception (bar payant)	
7:00 – 8:00 Keith Devlin Plenary Lecture Conférence principale		7:00 – 8:00 Moshe Milevsky Public Lecture Conférence populaire	
8:00 – 10:00 Welcoming Reception Réception d'accueil	7:00 – 10:00 Banquet		

For the latest schedule details please visit the web site: www.cms.math.ca/events/summer05/
 La version la plus récente du programme est en ligne au www.cms.math.ca/reunions/ete05/

Nous avons terminé l'année 2004 en beauté avec la Réunion d'hiver qui s'est tenue à l'Université McGill, à Montréal, du 11 au 13 décembre. Ce fut une joie de retourner à Montréal, où s'est tenu le premier Congrès canadien de mathématiques, en 1945, les mathématiciens d'alors ayant souhaité que « la Société soit le déclencheur d'importants développements mathématiques au Canada ». Leur souhait a certainement été exaucé, comme en témoignent nos Réunions, véhicule privilégié des nombreuses réalisations du milieu mathématique.

La Réunion de Montréal nous a justement donné plus d'une raison de souligner l'excellence. La conférence Coxeter-James de la SMC a été donnée par Isabella Laba (UBC), et la conférence du Prix de doctorat, par Nicolaas Spronk (Waterloo). Le Prix de la SMC pour service méritoire est allé à Edgar Goodaire (Memorial), et le prix G. de B. Robinson de la SMC, à Javad Mashregi (Laval) et à Victor Havin (St Petersburg) pour leurs articles « Admissible Majorants for Model Subspaces of H^2 , Part I: Slow Winding of the Generating Inner Function » et « Admissible Majorants for Model Subspaces H^2 , Part II: Fast Winding of the Generating Inner Function », publiés par le *Journal canadien de mathématiques*, volume 55 (2003), no 6. Le prix Adrien-Pouliot de la SMC a pour sa part été attribué à Jean-Marie de Koninck (Laval). Nous avons eu la chance d'accueillir au banquet le petit-fils d'Adrien Pouliot, qui a remis le prix en personne au nom de la famille. Les quatre conférenciers principaux étaient Michael Bennett (UBC), Persi Diaconis (Stanford), Rainer Steinwandt (Karlsruhe) et Rostislav Grigorchuk (Texas A&M), et Alexei G Myasnikov (McGill) a prononcé la conférence populaire. Dix-sept symposiums étaient au programme de la Réunion, dont un en histoire des mathématiques, un en éducation, en plus d'une session de communications libres. J'ai personnellement eu la chance d'avoir à mes côtés David, Bessie et Jonathan Borwein, au banquet, pour remettre à Arthur Sherk un chèque de 50 000 \$ pour la création du prix David-Borwein de mathématicien émérite.

Outre les activités à caractère mathématique, nous avons profité des talents d'organisation et de l'exceptionnelle hospitalité de nos hôtes

à Montréal. Un grand merci à la directrice de la Réunion, Olga Kharlampovich (McGill), au président du comité d'organisation, William G. Brown (McGill), ainsi qu'à K. N. (Gowri) GowriSankaran, directeur du département de mathématiques et de statistique de McGill. Sans oublier, comme toujours, au personnel dévoué du bureau administratif de la SMC.

Je profite de l'occasion pour vous rappeler que le Forum canadien sur l'enseignement des mathématiques 2005 se déroulera à Toronto du 6 au 8 mai prochains. La coprésidence du forum 2005 est assurée par Florence Glanfield (Saskatchewan), Bradd Hart (McMaster) et Frédéric Gourdeau (Laval). Ce forum réunira des enseignants et des administrateurs d'universités et d'écoles de tout le pays, toujours dans l'optique d'améliorer l'enseignement des mathématiques dans nos écoles. Le forum 2005 se déroulera sous le thème « Pourquoi enseigner les mathématiques ? » Il proposera des conférences plénaires ou principales ainsi que des séances de travail en groupe. Quelques thèmes des discussions et groupes de travail sont déjà décidés : stratégies d'enseignement des notions de calcul à la petite enfance et enseignement des mathématiques adapté à l'âge des enfants; stratégies d'augmentation du nombre d'étudiants très forts en mathématiques dans les programmes de sciences et de génie à forte teneur mathématique; l'enseignement des mathématiques aux élèves à risque; méthodes efficaces d'enseignement aux futurs enseignants de mathématiques; l'enseignement des mathématiques aux autochtones. On s'attend à ce que les groupes de travail qui participeront au forum élaborent des projets, des programmes et des énoncés qui aideront le Canada à trouver des solutions à ces difficultés.

On constate de plus une volonté, chez les associations provinciales d'enseignants de mathématiques, d'entretenir et de renforcer les liens créés au Forum de 2003. Le Comité pour l'avancement des mathématiques a recommandé que ces forums se tiennent tous les trois ou quatre ans.

Les membres de la communauté mathématique étendue collaborent plus que

jamais. Nous prévoyons plusieurs congrès en collaboration avec nos nombreux partenaires, et l'on constate une volonté certaine de collaboration dans d'autres dossiers. Je suis enchanté de pouvoir vous annoncer que nous avons conclu un nouveau partenariat avec la Société statistique du Canada. Notre personnel d'Ottawa fournira en effet divers services (adhésion, etc.) à nos collègues les plus proches. De plus, Christiane Rousseau (UM) et moi avons assisté à une réunion à Banff en compagnie d'autres porte-parole de la communauté, pour travailler à l'élaboration d'une vision d'avenir commune. Un document est en cours de rédaction et sera diffusé en temps opportun. Entre autres sujets abordés à cette occasion, mentionnons la place des mathématiques canadiennes sur la scène internationale, comment faire du Canada un centre mondial de l'enseignement des mathématiques aux cycles supérieurs et les relations avec le CRSNG.

Le programme Math à Moscou a été reconduit pour une troisième année. Le gagnant du concours de l'automne est Simon Belzile de l'Université du Québec à Montréal. Il ira passer le semestre d'hiver 2005 à l'Université indépendante de Moscou. La date limite d'inscription au prochain concours est le 30 mars 2005. Deux bourses d'études seront alors attribuées.

La SMC est partenaire de la Banff Renaissance Conference qui se déroulera du 31 juillet au 3 août 2005, dans le cadre des International Bridges Conferences on Mathematical Connections in Art, Music and Science. La conférence de Banff est une initiative de Robert Moody et un effort concerté du PIMS, du Banff Centre, de la SMC et des Bridges Conferences. Le dernier jour de cette rencontre sera consacré à Donald Coxeter, en hommage à la vie de cet homme et aux liens qu'il a créés entre les mathématiques et l'art. Les actes de ce congrès seront publiés et diffusés au pays. Nous espérons que de nombreux canadiens y participeront et se proposeront pour donner une conférence ou organiser un atelier. Pour de plus amples renseignements sur les Bridges Conferences 2004 tenus à Winfield (Kansas) ou sur ces conférences en général, consultez le www.sckans.edu/~bridges. Le site des conférences

de 2005 est logé au www.pims.math.ca/RenaissanceBanff/

La situation financière de la SMC n'est pas aussi intéressante qu'elle pourrait l'être. Pour plusieurs raisons, nos abonnés de l'extérieur du Canada paient leur abonnement en devises américaines. Comme la valeur du dollar canadien a beaucoup augmenté dernièrement par rapport au dollar américain, nos revenus tirés du taux de change ont chuté. Nous n'avons alors d'autre choix que de hausser nos revenus ou de réduire nos dépenses. Ainsi, nous avons réduit nos dépenses en procédant à une réorganisation du bureau administratif d'Ottawa l'an dernier. Notre exécutif travaille aussi d'arrache-pied à une autre option : nous avons en effet publié une demande de propositions à l'intention d'entreprises spécialisées dans les campagnes

de financement. Nous examinerons les propositions en début d'année et nous envisageons la création de nouvelles revues. En outre, Jonathan Borwein (Dalhousie) et Klaus Peters préparent en ce moment une nouvelle collection d'ouvrages.

Christiane Rousseau, notre présidente sortante, s'est fait la porte-parole du projet de la communauté mathématique étendue d'accueillir le Congrès international des mathématiciens à Montréal en 2010 (CIM 2010). La candidature de Montréal a été soumise à l'Union mathématique internationale en automne dernier, accompagnée de lettres d'appui venant des quatre coins du pays, y compris du bureau du premier ministre. Nous appuyons également, à titre de partenaires, la candidature de Vancouver qui souhaite accueillir le Conseil

international de mathématiques industrielles et appliquées en 2010. Imaginez un peu la merveilleuse année mathématique que nous connaîtrions si les deux candidatures étaient retenues... Nous aurions alors toutes sortes de possibilités d'organiser des colloques et des ateliers satellites.

Enfin, je suis très heureux d'annoncer que le conseil d'administration a prolongé les mandats d'Arthur Sherk à la trésorerie de la Société et celui de Graham P Wright à la direction générale. Leur dur labeur et leur dévouement envers la Société depuis de nombreuses années a grandement contribué à la réussite de nos entreprises. Nous nous estimons choyés qu'ils aient accepté de prolonger leur mandat. Merci Graham et Arthur.

AWARDS ANNOUNCEMENT *continued* / LAURÉATS DES PRIX DE LA SMC *suite*



Javad Mashreghi was born in Kashan, Iran, in 1968 and received his B.Sc. in Electrical Engineering (Electronics) from the University of Tehran in 1991. He obtained his M.Sc. in Mathematics under the supervision of Arsalan Chademan from the University of Tehran in 1993.

In 1996, Javad Mashreghi moved to Canada and, in 2001, he obtained his Ph.D. under the supervision of Victor Havin (St. Petersburg University) and Paul Koosis (McGill University). Also in 2001, Mashreghi joined the staff at the Université Laval and was selected a Professeur étoile for his excellence in teaching in 2003.

In addition to holding an NSERC individual research grant, Mashreghi has two team grants from Fonds Québécois de la Recherche sur la Nature et les Technologies (FQRNT). He has also received the prestigious FCAR individual research grant for new researchers for the period 2002 to 2005. Since June 2004, he has also been an Adjunct Professor of the University of Tehran.

Mashreghi's research interest is complex analysis, in particular spaces of analytic functions, e.g. Hardy, Bergman and Dirichlet spaces, with connections to other fields including potential theory, approximation theory, Fourier analysis and harmonic analysis.

Javad Mashreghi est né à Kashan (Iran) en 1968. Il a obtenu son baccalauréat en génie électrique (électronique) de l'Université de Téhéran en 1991. Sous la direction d'A. Chademan, il a obtenu une maîtrise en sciences (mathématiques) de la même université en 1993.

En 1996, Javad Mashreghi est arrivé au Canada. En 2001, il a obtenu son doctorat sous la direction de Victor Havin (Université de St. Petersburg) et de Paul Koosis (Université McGill). Cette même année, il est devenu professeur à l'Université Laval, où il a été nommé « Professeur étoile » pour son excellence en enseignement en 2003.

Outre sa subvention de recherche individuelle du CRSNG, Javad Mashreghi détient deux subventions d'équipe du Fonds Québécois de la recherche sur la nature et les technologies (FQRNT). Il a également reçu la prestigieuse subvention de recherche individuelle pour les nouveaux chercheurs du FCAR pour la période 2002-2005. Depuis juin 2004, il est aussi professeur associé de l'Université de Téhéran. Javad Mashreghi s'intéresse à l'analyse complexe, en particulier aux espaces de fonctions analytiques, par exemple les espaces de Hardy, Bergman et Dirichlet en relation avec d'autres domaines, dont l'approximation, la théorie du potentiel, l'analyse de Fourier et l'analyse harmonique.

CMS Prize Lectureships and Awards Programmes Prix et bourses de la SMC

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

Vous trouverez l'information la plus récente sur les prix et bourses de la SMC, y compris les listes de lauréats, sur le site Web suivant : www.cms.math.ca/Prix/

The “mathematical sciences” community continues to collaborate and work together as never before. We are planning several joint meetings with our many and varied partners, and the good will is demonstrated in other ways as well. I am delighted to be able to report that we have a new partnership agreement with the Statistical Society of Canada through which our staff in Ottawa will provide membership and other services to our closest scientific colleagues. As well, Christiane Rousseau (UM) and I attended a meeting in Banff with various leaders of the community to work on the development of a common vision for the future. A document is being written and will be circulated in due course. The discussions ranged from the place of Canadian mathematics on the international scene to mechanisms by which we might make Canada a world centre for graduate education in mathematics to relations with NSERC.

The Mathematics in Moscow program has been renewed for a third year. The winner of the fall competition is Simon Belzile from the Université du Québec à Montréal. He will spend the winter 2005 studying mathematics at the Moscow Independent University. The deadline for the next competition is March 30, 2005 when two scholarships will be awarded.

The CMS is a partner in the Renaissance Banff Conference which will be held July 31 – August 3, 2005. The Banff Renaissance Conference will be part of the International Bridges Conferences on Mathematical Connections in Art, Music and Science. The Conference is an initiative of Robert Moody and a collaborative effort by PIMS, the Banff Centre, the CMS and the Bridges Conferences. The last day of the event will be a Coxeter Day in commemoration of the life and mathematics arts connections of Donald Coxeter. The proceedings will be published and distributed nationally. We hope that many Canadians will decide to participate and propose to give a lecture or organize a workshop session. You will find information on the Bridges Conference 2004 in Winfield (Kansas) and in general on the Bridges Conferences at: www.sckans.edu/~bridges.

www.sckans.edu/~bridges. The link to the 2005 Conference is www.pims.math.ca/RenaissanceBanff/

The financial situation of the CMS is not as good as it could be. For a variety of reasons our subscribers outside of Canada pay in US dollars. As the Canadian dollar is now valued relatively higher than it has been for many years compared to the American dollar the funds we generate from the exchange rate have gone down dramatically. We have no choice but to increase revenues or to cut expenses. We have taken steps to reduce expenses through the re-organization of the Executive Office in Ottawa last year. And the Executive is working hard on the former option as well: we have issued a Request for Proposals from private fund-raising firms which will be considered early this year, and we are considering the creation of new journals. As well, Jonathan Borwein (Dalhousie) is working with Klaus Peters on a new book series.

Christiane Rousseau, our Past-President, has been playing the lead role on a bid by the entire Mathematical Sciences community to host the International Congress of Mathematicians in Montreal in 2010 (ICM 2010). The bid went to the International Mathematics Union this fall with letters of support from all across the country, including the Prime Minister. We are also supporting as a partner a bid to host the International Council of Industrial and Applied Mathematics meeting in Vancouver in 2010. Imagine the wonderful year of mathematics we will have if both bids are successful. There will be unparalleled opportunities for us to create outstanding satellite conferences and workshops.

Finally, I note with great pleasure that the Board extended the terms of Arthur Sherk as Treasurer of the Society and of Graham Wright as Executive Director of the Society. Their hard work and dedication to the Society over many years has made an enormous difference to the success of our enterprise, and we are very fortunate that they have agreed to continue. Thank you, Graham and Arthur.

NSERC - CMS Math in Moscow Scholarships

The Natural Sciences and Engineering Research Council (NSERC) and the Canadian Mathematical Society (CMS) supports scholarships at \$10,000 each. Canadian students registered in a mathematics or computer science program are eligible.

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

Math in Moscow Program
www.mccme.ru/mathinmoscow/

Application details
www.cms.math.ca/bulletins/Moscow_web/

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

Two scholarships will be awarded in the spring competition

Deadline
March 30, 2005
to attend the Fall 2005 semester



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News from the Fields Institute

String Theory. This year's thematic program in the Geometry of String Theory, run jointly with the Perimeter Institute in Waterloo, is in full swing. The emphasis during the fall term was "mathematical". There were two graduate courses, one on String Theory by Amanda Peet (Physics, Toronto) and the other on Mirror Symmetry by Kentaro Hori (Physics and Mathematics, Toronto). The emphasis in the winter term will be "physical". A graduate course on Symplectic Geometry and Topology will be given by Boris Khesin (Mathematics, Toronto), and the workshops scheduled in the winter term of the String Theory program are:

- *Topological Strings* (January 10–14)
- *N=1 Compactifications* (March 21–25)
- *String Phenomenology* (March 28–April 1)
- *Gravitational Aspects of String Theory* (May 2–6)

Two workshops were held last term, Forms of homotopy theory: Elliptic cohomology and loop spaces and Mirror symmetry. The fall Coxeter Lecture Series consisted of three lectures by Nigel Hitchin (Oxford). The winter editions of the Coxeter Lecture Series will be delivered by Robbert Dijkgraaf (Inst. for Theoretical Physics, Amsterdam) on January 17–19, and Renata Kallosh (Stanford) (date TBA), and the Distinguished Lecture Series by Edward Witten (IAS, Princeton), tentatively scheduled for April 4–7. A bi-weekly seminar has been running all year. Up-to-date information can be found on the program homepage www.fields.utoronto.ca/programs/scientific/04-05/string-theory/.

A summer school program in Strings, Gravity and Cosmology will take place during June 20 to July 8 at the Perimeter Institute, and the premiere international conference in string theory, Strings 2005, will be held for the first time in Canada, at the University of Toronto. Other associated activities are the 2005 Great Lakes Geometry Conference, April 30–May 1 at the Perimeter Institute, and a special session on String Theory and Integrable Systems, June 4–6 at the University of Waterloo.

The thematic programs for 2005–2006 are Renormalization and Universality in Mathematics and Mathematical Physics, and Holomorphic Dynamics, Laminations, and Hyperbolic Geometry.

Other activities. There are at least 10 "continuing" seminars at the Fields Institute, including algebraic combinatorics, applied mathematics, geometry and model theory, industrial optimization, probability, quantitative finance, quantum information, risk management, set theory, and string theory. Details about them (and the other activities at Fields) can be found at www.fields.utoronto.ca/programs/scientific/index.html.

The Industrial Optimization seminar is the latest addition to this list. It is organized by Tomas Terlaky (McMaster) and meets at the Institute in the early evening on the first Tuesday of each month.

Workshops during this term, aside from those in the String Theory program, include:

- Resolutions, Inverse Systems and Coinvariants (held at U. of Ottawa, January 13–15)
- IMACS International Symposium on Iterative Methods in Scientific Computing (May 5–8)
- DNA Computing Conference (held at UWO, June 5–6)
- Fields Institute Summer School in Operator Algebras (held at U. of Ottawa, June 7–17)
- 33rd Canadian Operator Symposium (COSy) (held at U. of Ottawa, June 19–24)
- International Linear Algebra Society—12th Conference (held in Regina, Sask. June 26–29)

Readers of the CMS Notes are reminded that they can subscribe to a weekly emailing of Fields events on www.fields.utoronto.ca/mailist, and that the overheads and/or sound tracks of most lectures can be found on our website at www.fields.utoronto.ca/audio/.

Application Deadlines: For full details, follow "Proposals & Applications" on our homepage www.fields.utoronto.ca. Some of the upcoming deadlines are

- Thematic Programs (letters of intent or proposals), March 15
- Workshops, seminars, conferences, summer schools, March 15
- Fields Institute Fellows, February 15

CALL FOR NEWS FROM THE DEPARTMENTS

This is a request for news items to appear in the next issue of the *NOTES*. REPLY to notes-editors@cms.math.ca by the deadlines indicated at the back of this issue. Our intention is to circulate this reminder at least once per term, but this column will appear in all 8 issues (Sep, Oct, Nov, Dec, Feb, Mar, Apr, May) and your news will always be welcome. We hope that departments will submit news at least once per term. Thanks for your cooperation.

PLEASE USE THE FORMAT GIVEN BELOW.

Appointments (rank, date, field):

Promotions (rank, date):

Retirements (rank, date):

Resignations:

Death (rank, date):

Awards/Distinctions :

Visitors (name, country, area, dates):

Other News:

The Nominating Committee wishes to announce its initial list of candidates for the 2005 elections. Each candidate named has agreed to stand for the position indicated and to furnish the committee with the biographical information requested.

Further nominations are sought and will be accepted by the Nominating Committee provided: (i) that each such person is supported in writing by at least five (5) other members of the Society; (ii) that the person has given written acceptance to stand for office and to supply the biographical information which will be requested by the Nominating Committee and (iii) that the information sought in (i) and (ii) is received by **March 4, 2005**.

Additional nominations together with supporting materials should be sent to the address below:

Le comité des mises en candidature a établi la liste initiale des candidats pour les élections de 2005. Chaque personne sur la liste a accepté d'être candidat(e) et de fournir au comité les renseignements biographiques désirés. Les mises en candidature supplémentaires sont sollicitées et seront acceptées par le Comité des mises en candidature pourvu: (i) que la personne ait reçu l'appui par écrit d'au moins cinq (5) autres membres de la Société; (ii) que la personne ait accepté par écrit d'être candidate et de fournir les renseignements biographiques qui lui seront demandés par le Comité; et (iii) que les renseignements prévus aux (i) et (ii) nous parviennent avant le **4 mars 2005**.

Les mises en candidatures supplémentaires avec documents à l'appui doivent être envoyées à l'adresse ci-dessous.

Nominating Committee Chair / Président du Comité des mises en candidatures

Canadian Mathematical Society
Société mathématique du Canada
577 King Edward Ottawa, Ontario K1N 6N5

INITIAL SLATE / CANDIDATS PROPOSÉS

Executive Committee / Comité exécutif

President Elect / Président élu (2005-2006); **President / Président** (2006-2008); **Past President / Président sortant** (2008-2009) :
Thomas S. Salisbury (York)

Vice-Presidents / Vice-présidents (2005-2007)

Western Provinces and Territories / Provinces de l'Ouest et territoires :
Edwin Perkins (UBC)

Ontario : *Ram Murty (Queen's)*

Quebec / Québec : *Bruno Rémillard (École des Hautes Études Commerciales)*

Atlantic Provinces / Provinces de l'Atlantique : *Jason Brown (Dalhousie)*

Board of Directors / Conseil d'administration (2005-2009)

Atlantic / l'Atlantique (2 to be elected / 2 à élire)
Franklin Mendivil (Acadia)
Yuan Yuan (Memorial)
David Pike (Memorial)

Quebec / Québec (2 to be elected / 2 à élire)
Javad Mashreghi (Laval)
Shiping Liu (Sherbrooke)
Olivier Collin (UQAM)

Ontario (3 to be elected / 3 à élire)
Victor Leblanc (Ottawa)
Matthias Neufang (Carleton)
Robert McCann (Toronto)
Richard Blute (Ottawa)

West / l'Ouest (3 to be elected / 3 à élire)
Imin Chen (SFU)
Jennifer Hyndman (UNBC)
Michael Bennett (UBC)
Yong Zhang (Manitoba)

At large / de l'ensemble des membres (1 to be elected / 1 à élire)
Name to be announced / à venir

CONTINUING MEMBERS / LES MEMBRES QUI CONTINUENT

*Here are the members elected in 2003 and continuing on the Board of Directors until June 30, 2007.
Voici les membres élus en 2003 et qui continuent au conseil d'administration jusqu'au 30 juin 2007.*

West / l'Ouest

Terry Gannon (Alberta)
Hugh Williams (Calgary)
Murray Bremner (Saskatchewan)

Ontario

Michèle Mosca (Waterloo)
Juris Steprans (York)
Matthew Davison (Western)

Atlantic / l'Atlantique

Daniel Kucerovsky (UNB)
Jeannette Janssen (Dalhousie)

Quebec / Québec

Marlène Frigon (Montréal)
John Toth (McGill)

At large / de l'ensemble des membres

Stan Wagon (Macalester College Minnesota)

FORUM CANADIEN SUR L'ENSEIGNEMENT DES MATHÉMATIQUES 2005

Le Forum canadien sur l'enseignement des mathématiques 2005 (FCEM2005) se tiendra du 6 au 8 mai 2005 à l'Université de Toronto. Le Forum se déroulera principalement sur le campus de l'université de Toronto, certaines activités étant prévues à l'Institut Fields ou à proximité. Le Forum regroupera quelque 200 participantes et participants, et il est souhaité que ceux-ci proviennent en nombre relativement égaux des trois secteurs suivants : le monde scolaire ; la formation à l'enseignement et de la recherche en didactique ; et la recherche en mathématiques (tel que représentée par la SMC). Nous désirons aussi assurer la participation de personnes de toutes les régions du pays. Cette description ne se veut cependant pas limitative et d'autres secteurs importants seront représentés.

Le thème du Forum est « Pourquoi enseigner les maths ? » Le Forum comprendra des séances plénières ainsi que des groupes de travail. Les thèmes suivants figurent au nombre des thèmes identifiés pour les groupes de travail : approches novatrices pour l'apprentissage des mathématiques dans les premières années d'étude; l'enseignement des mathématiques pour les jeunes à risque; un regard critique sur l'utilisation des nouvelles technologies dans l'enseignement des mathématiques; stratégies pour augmenter le nombre d'étudiantes et d'étudiants dans les programmes demandant beaucoup de mathématiques, tels le génie et les sciences; approches efficaces pour la formation des enseignantes et enseignants de mathématiques; l'enseignement des mathématiques et les communautés autochtones.

L'objectif du Forum est de promouvoir une discussion portant sur des enjeux fondamentaux quant au développement et à l'avenir de l'enseignement des mathématiques à l'échelle nationale. Cette discussion, dont nous souhaitons qu'elle se poursuive au-delà du Forum, doit avoir lieu entre les intervenants de tous les niveaux d'enseignements.

Lors du Forum, les groupes travailleront à l'élaboration de projets, d'initiatives, ou encore à la rédaction d'énoncés qui permettront de répondre (en partie) aux enjeux soulevés. Ces projets, initiatives et énoncés seront diffusés de diverses manières auprès des ministères, des commissions scolaires, des universités et collèges, des parents, des étudiantes et étudiants, ainsi que du grand public.

Nous espérons que plusieurs membres de la SMC voudront prendre part au Forum 2005. Il est très important de signaler que le Forum est une rencontre de travail et qu' étant donné la nature de cette rencontre, la participation se fait sur invitation uniquement. Nous vous encourageons à faire connaître votre intérêt à prendre part au Forum, si ce n'est déjà fait, en écrivant à l'un des présidents par courriel. Ces présidents sont Florence Glanfield (florence.glanfield@usask.ca), Frédéric Gourdeau (fredg@mat.ulaval.ca) et Bradd Hart (hartb@mcmaster.ca).

Nous vous invitons à consulter le site du Forum 2005 à l'adresse www.smc.math.ca/Reunions/FCEM2005 pour plus d'information.

THE 2005 CANADIAN MATHEMATICS EDUCATION FORUM

The 2005 Mathematics Education Forum will be held May 6 – 8, 2005 on the campus of the University of Toronto, with some events happening at either the Fields Institute or other nearby locations. We hope that approximately 200 people will be able to attend and it is our hope that these will come in roughly equal numbers from K-12 teaching, from mathematics education research and from mathematics itself (as represented by the CMS). We are also trying to balance the participation by region. This description is not meant to limit the type of participant but rather to give some idea of the nature of this meeting.

The overall theme of the forum will be “Why Teach Mathematics?” The format of the forum will consist of plenary or key note sessions and working group sessions. Some of the discussion and working group themes that have been identified so far include: approaches to early numeracy and age-appropriate mathematics education; strategies for increasing the number of highly qualified students in mathematically intense programs in science and engineering; mathematics education for students at risk; effective approaches to the education of all mathematics educators; and mathematics education and the aboriginal community.

The purpose of this invitational forum is to develop a national ongoing conversation, among educators at all levels of schooling, about important issues and concerns in the development and future of mathematics education in Canada. It is the intent that groups working together in this forum will develop projects, initiatives, and statements that will outline ways in which Canadians may address these issues and concerns. The projects, initiatives, and statements developed during this forum will be shared widely with policy makers, school divisions, universities, colleges, parents, students, and the general public in a variety of ways.

We hope that many members of CMS will take part in the 2005 Forum. It is important to stress that the Forum is a working meeting and that because of its nature, participation is by invitation only. We encourage you to let one of the three chairs know of your interest in taking part in the Forum, if you have not done so already, by sending an e-mail to either Florence Glanfield (florence.glanfield@usask.ca), Frédéric Gourdeau (fredg@mat.ulaval.ca) or Bradd Hart (hartb@mcmaster.ca).

Please review our website at www.cms.math.ca/Events/CMEF2005 for more information about the forum.

Frédéric Gourdeau

CALL FOR NOMINATIONS / APPEL DE MISES EN CANDIDATURE

The CMS Research Committee is inviting nominations for three prize lectureships. These prize lectureships are intended to recognize members of the Canadian mathematical community.

Le Comité de recherche de la SMC lance un appel de mises en candidatures pour trois de ses prix de conférence. Ces prix ont tous pour objectif de souligner l'excellence de membres de la communauté mathématique canadienne.

Prix Coxeter-James Prize Lectureship

2006

Le prix Coxeter-James est décerné à une personne qui a obtenu une nomination pour la mise en candidature au congrès d'hiver. Les lettres de nomination doivent être envoyées si elles sont disponibles. Le récipiendaire doit être membre de la communauté mathématique canadienne.

The Coxeter-James Prize Lectureship may be made up to three years after nomination is made in the letters should include at least one member of the Canadian mathematical community.

Prix Jeffery-Williams Prize Lectureship

2007

Le prix Jeffery-Williams est décerné à deux personnes nommées à jour et demeureront actives pendant au moins trois ans. Les noms des deux personnes doivent être envoyés à la Société mathématique canadienne.

The Jeffery-Williams Prize Lectureship recognizes mathematicians who have made outstanding contributions to mathematical research. A nomination can be updated and will remain active for three years. The prize lecture will be delivered at the Summer Meeting. Nomination letters should include three names of suggested referees as well as a recent curriculum vitae, if available. The recipient shall be a member of the Canadian mathematical community.

Prix Krieger-Nelson Prize Lectureship

2007

Le prix Krieger-Nelson est décerné à une personne qui a été nommée à deux fois. La nomination doit être envoyée pendant au moins trois ans. Les noms des deux personnes doivent être envoyés à la Société mathématique canadienne.

The Krieger-Nelson Prize Lectureship is awarded for two years. The prize lecture will be delivered at the Summer Meeting. Nomination letters should include three names of suggested referees as well as a recent curriculum vitae, if available. The recipient shall be a member of the Canadian mathematical community.

La date limite pour les mises en candidature est le 30 juin 2005. Faire parvenir vos lettres à l'adresse suivante :
The deadline for nominations is June 30, 2005. Letters of nomination should be sent to the address below.

Finnur Lárusson, Chair/Président
CMS Research Committee / Comité de recherches de la SMC
Department of Mathematics
The University of Western Ontario
London, Ontario N6A 5B7 Canada

The 2005 Krieger-Nelson and Jeffery-Williams Prizes will be presented at the CMS Summer Meeting 2005 in Waterloo, Ontario, June 4 to 6.

Les prix Krieger-Nelson et Jeffery-Williams seront présentés à la Réunion d'été 2005 de la SMC à Waterloo (Ontario) du 4 au 6 juin.

CALL FOR NOMINATIONS / APPEL DE MISES EN CANDIDATURE

Prix Adrien-Pouliot Prize Lectureship

2005

Nous sollicitons des tiques éducatives au Canada. un nouveau programme spéculaires, des conférences ou des concours à l'intention des étudiants, etc.

Les candidatures doivent nous être transmises via le « Formulaire de mise en candidature » disponible au site Web de la SMC : www.cms.math.ca/Prix/info/ap. Pour les limites prescrites ne sera pas considérée par le comité de sélection.

Il est possible de renouveler le présentateur n'a qu'à envoyer la SMC avant le **30 avril 2005**. Veuillez faire parvenir vos mises en candidature en six exemplaires à l'adresse ci-dessous :

Nominations of individuals solicited. Such contributions of a new program in establishing mathematics displays, establishing and supporting mathematics conferences and competitions for students, etc.

Nominations must be submitted using the Nomination Form available from the CMS Web site at: www.cms.math.ca/Prizes/info/ap. To assure uniformity in the selection by the Selection Committee.

Individuals who make updating the **2005**. Please send six copies of each nomination to the address given below.

April 30,

The Adrien Pouliot Award / Le Prix Adrien-Pouliot
Canadian Mathematical Society / Société mathématique du Canada
577 King Edward
Ottawa, Ontario K1N 6N5

Distinguished Service Award / Prix de la SMC pour service méritoire

2005

In 1995, the Society cal community and, in particular, to the Canadian Mathematical Society.

The 2004 award recipient was Edgar Goodaire (Memorial University of Newfoundland).

Nominations should include a reasonably detailed rationale and be submitted by **March 31, 2005**, to the address below.

En 1995, la Société munauté mathématique canadienne et, notamment, à la SMC.

Le lauréat du prix 2004 était Edgar Goodaire (Memorial University of Newfoundland).

Pour les mises en candidature prière de présenter des dossiers avec une argumentation convaincante et de les faire parvenir, **le 31 mars 2005** au plus tard, à l'adresse ci-dessous :

Selection Committee / Comité de sélection
Distinguished Service Award / Prix pour service méritoire
Canadian Mathematical Society / Société mathématique du Canada
577 King Edward
Ottawa, Ontario K1N 6N5

The 2005 Adrien-Pouliot and Distinguished Service Awards will be presented at the CMS Winter Meeting 2005 in Victoria, BC, December 10 to 12.

Les prix pour service méritoire et Adrien-Pouliot seront présentés à la Réunion d'hiver 2005 de la SMC à Victoria, C.-B., du 10 au 12 décembre.



AN IDEA, AN ATTEMPT, A HOPE

A full version of this article appears on the CMS Website.

Platonic solids were known to humans much earlier than the time of Plato. Theatetus (415 - 369 BC), the Greek mathematician, has been credited for developing a general theory of regular polyhedra and adding the octahedron and icosahedron to solids that were known earlier. The name "Platonic solids" for regular polyhedra comes from the Greek philosopher Plato (427 - 347 BC) who associated them with the "elements" and the cosmos in his book Timaeus. The investigation of mathematical orders and relationships in solids fascinated Plato immensely and he tried to apply this order to other objects of importance in his philosophy: "Elements". Elements in ancient beliefs were the four objects that constructed the physical world; these elements are fire, air, earth, and water. Plato suggested that the geometric forms of the smallest particles of these elements are regular polyhedra. Fire is represented by the tetrahedron, earth the cube, air the octahedron, water the icosahedron, and the almost-spherical dodecahedron the universe.

Even though such a relationship is today only a philosophical fantasy, it represents the level of fascination of mankind with mathematics ideas. Such a fascination empowers other areas of humanities such as art as well.

The artistic fascinations of such constructions, that include other spherical Platonic as well as Archimedean solids, can be observed in the immensely rich and detailed designs of the medieval Persian dome interiors as can be observed in the following examples.

In today's art, the fascinations for such mathematics abstraction of solids include a wide range of artists from M. C. Escher and his meticulous mathematics art to the member of the surrealist movement, Salvador Dali.

George W. Hart is an artist, a mathematician, and a research professor in the Computer Science Department at the Stony Brook University, New York. His geometric sculptures, which are mostly based on polyhedra, have received public attentions and scholars

alike. His online *Encyclopedia of Polyhedra* provides a substantial reference, which is used by students and researchers around the world.

The Northport Public Library commissioned George to create a unique *Millennium Bookball* sculpture for its newly expanded Laurel Avenue building. The work is a spherical assemblage of wooden "books," five feet in diameter, hanging in the two-story catalog area of the library. The books are made of



various hard woods, with the titles and authors carved and gold leafed. The sculpture was assembled at a community assembly event something like a barn-raising, but for art.

The rhombic icosahedron presented in the second figure is a work of Chris K. Palmer, a Bridges Conference friend and speaker, that appeared on the front cover of the 2004 Bridges Proceedings. It is ornamented with an original composition using a traditional tile set laser engraved onto wood. The pattern consists of rings of twelve pointed stars that would be on an equilateral triangular grid when tessellated on a plane. The pattern is slightly distorted to fit on the rhombic faces and the stars make rings of ten when the polyhedron is assembled. Ornamented polyhedra have been a subject of interest to Chris Palmer for many

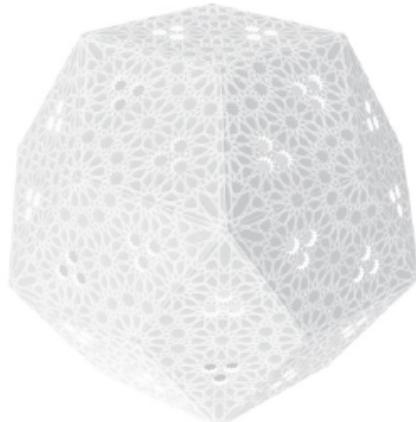
years but he has been recently inspired to do this work and others like it by contact with Marc Pelletier, Jay Bonner, and George Hart.

Mathematics has periodically been employed not only to interpret and analyze art and architecture, but also to directly integrate with artistic products. There are periods in the civilizations of numerous cultures around the world in which artists have been fascinated by mathematics, encouraged and even forced to become mathematicians, as happened in antiquity, during the era of the Islamic art, and in the Renaissance.

During the European Renaissance, art, mathematics, architecture, science, and music flourished side by side. This is no longer the case, and although many artists and scientists are calling for ways to regain the lost mutual understanding, appreciation, and exchange, it has been hard to know how to create environments in which this can happen in a meaningful way.

Michele Emmer, a professor of mathematics at the University of Rome, a 2000 Bridges Conference speaker, and one of the first in the world in recent years to call for a gathering of mathematicians and artists under one roof, writes: "Renaissance painters turned to mathematics not only because they had the problem of depicting the natural world realistically on canvas, of producing scenes in three dimensions with depth, but also, as Morris Kline has pointed out in his important book on mathematics in western culture, they were profoundly influenced by the rediscovery of Greek philosophy. They were wholly con-

vinced that mathematics was the true essence of the physical world and that the universe was ordered and explainable in geometric terms. This great interest forced Renaissance painters to become, as Kline defined them, the best applied mathematicians of the period. Since the professional mathematicians of that time did not have



the geometric instruments which the artists needed, they themselves also had to become learned and active theoretical mathematicians."

No less a divide exists between mathematics and the general public. All human beings are fluent in recognizing and appreciating patterns, and are able to deal effortlessly with the abstractions of language, music, visual art, and theatre. Yet most people think that they have a latent aversion to mathematics and are largely unaware of how deeply embedded it is in the world around them. Still, we have seen over and over again how fascinated and excited people become when mathematical connections are presented in ways which relate to their experiences and trigger their natural curiosities and aesthetic sensibilities.

The annual Bridges Conference, created in 1998 and running annually since, have provided a remarkable model of how these divides can be crossed. Here practicing mathematicians, scientists, artists, educators, musicians, writers, computer scientists, sculptures, dancers, weavers, and model builders have come together in a lively and highly charged atmosphere of mutual exchange and encouragement. Important components of these conferences, apart from formal presentations, are gallery displays of visual art, working sessions with practitioners and artists who are crossing the mathematics-arts boundaries, and evening musical or theatrical events.

The Bridges conference has enjoyed for many years the attendance of Corey Cerovsek and his mathematics discussions and music performances. A Canadian native, Cerovsek began violin studies at five years of age and graduated from Toronto's Royal Conservatory of Music with a gold medal for the highest marks in strings at 12. Then he was accepted by Josef Gingold as a student and enrolled at Indiana University, where he completed his doctoral course work in mathematics and music at age 18. He has performed extensively in North America, Europe, and Australia.

A lasting record of each Bridges Conference is its Proceedings – a beautiful resource book of the papers and the visual presentations of the meeting.

The Bridges Conference witnesses numerous relationships that developed or deepened during the conference among scientists and artists. Brent Collins, an artist, and Carlo Séquin, a computer science professor at the University of California, Berkeley – both members of the Bridges Advisory Committee – are among them. Brent's artwork that is intuitive touches mathematics areas such as topology of minimal surfaces. Carlo's studying of Brent's work results in discovering the mathematics relationships and constraints of the work and then generalizing it in order to create other possibilities of the work in computer to show such a surface. In return, Brent can "see" and then make his new work based on this new finding which is almost impossible to "imagine". Then his new artwork would be the new area of research for Carlo's future computer imaginations and productions. What Brent has conceived through his artistic intuition, Carlo has presented using computer languages and mathematics. This partnership offers one image of the collaborative adventure sought by the Bridges Conference.

Douglas Dunham, a computer science professor at the University of Minnesota, Duluth, studied the Poincaré model of the hyperbolic plane and the way that he can employ computer to illustrate hyperbolic artwork that ranges from rendering Escher's work, to performing Celtic knot patterns, to spirals and spiral patterns. Irene Rousseau, an artist and art historian, uses the elements of this geometry to present them in her mosaic tiling art.

Left alone the public, some mathematics ideas, when pass a certain level, cannot be comprehended by scholars in other branches of science or even mathematicians in other fields. However, to support mathematics, mathematicians need to reach the public and other disciplines researchers. Despite the fact that the Geometry Center in the University of Minnesota, Minneapolis is closed today, some of its productions are still reaching the public to present interesting mathematics ideas.

A good example in this regard is the computer-graphics video "Outside In". In the late 1950s Steven Smale proved that it is possible to turn a sphere outside-in, that can pass through itself, by means of a continuous deformation, without any puncturing,

ripping, creasing, or pinching. A new proof of Smale's theorem that provided more geometric insight was presented by Bill Thurston. The video is based on Thurston's eversion.

In 1998, John M. Sullivan, a 1999 Bridges invited speaker, working with George Francis, Stuart Levy, and Camille Goudeseune, produced a computer graphics video, "The Optiverse", that illustrates his new way of eversions that are different from the earlier ones mentioned above in that they are computed by an energy minimization process [13]. This video that presents these minimax sphere eversions with colorful images and interesting music background, not only makes a better sense of a challenging mathematics problem for mathematicians, but also brings a sense of appreciation to the public and curiosity to the young generations – future mathematicians. Such a work presents how art can promote mathematics in an appropriate way.

Nat Friedman, a mathematician at the University at Albany, New York, a sculptor, and the director of the International Society of the Arts, Mathematics and Architecture (ISAMA) says: "The operative word that unifies art and mathematics is "seeing". More precisely, art and mathematics are both about "seeing relationships". One can see certain mathematical forms as art forms, and creativity is about seeing from a new viewpoint. Nat's recent art forms are the result of his mathematics studies in "Knot theory" and expressions of these forms in ceramics. Some images of his recent sculptures can be seen in the Proceedings of ISAMA/CTI 2004 edited by Stephen Luecking and published by DePaul University, Chicago, Illinois. Friedman was the organizer of Art and Mathematics conference series that began in 1992 and ended in 1998. This conference series was one of the sources of inspiration for the Bridges Conference.

This year's conference is located at the Banff Centre, Canada's only leading center dedicated to the arts, leadership development, and mountain culture. The center is also home to a world-class conference facility. The convergence of the resources, multidisciplinary programming, and spectacular physical location affords an inspirational learning experience.

The Banff International Research Station (BIRS) is a component of the Pacific Institute for the Mathematical Sciences (PIMS) and is located at the Banff Centre, where it organizes numerous mathematics research workshops. The directors of PIMS and the Banff Centre noticed a serious disconnection between this mathematics research station and the rest of the Banff Centre. They felt that they should go into a venture to connect all the different components.

Robert Moody, a professor of mathematics, and then director of BIRS, consulted with the then director of PIMS, Professor Nassif Ghoussoub, Professor David Eisenbud, the President of AMS, and also the current director of PIMS, Professor Ivar Ekeland. They decided to organize an interdisciplinary con-

ference with mathematics as its central theme at Banff Centre not only to bring different departments and organizations together at this center, but also to attract interested scholars, artists, and educators around the globe. An organizing committee was created that included (among others) the directors of PIMS and BIRS, and the director of the Bridges Conferences, Reza Sarhangi. This committee, based on the Bridges Conference objectives, mentioned below proposed a four-day workshop/conference, cosponsored with PIMS, the Banff Centre, and the Canadian Mathematical Society. The conference, will be held July 31 –Aug 3, 2005 at BIRS and the Banff Centre.

NEWS FROM DEPARTMENTS *continued*

Département de mathématiques Université de Sherbrooke

Appointments (rank, date, field):

Éric Marchand (Professeur titulaire, statistique) s'est joint au département le 1er août 2004.

Retirements: (rank, date)

Pierre Yves Leduc et Jacques Dubois ont pris leur retraite au 1er septembre 2004.

Visitors (name, country, area, dates):

Quelques visiteurs et postdocs récents au département :

Sonia Trepode
(Université de Mar del Plata, Argentine, algèbre, 04/01 à 04/03)

Maria Ines Platzeck
(Université Nationale du Sud, Argentine, algèbre, 04/02)

Lluis Miguel Plà
(Université de Lleida, Espagne, recherche opérationnelle et processus stochastiques, 04/06 à 04/08)

Raymundo Bautista (Université Nationale Autonome de Mexico, Mexique, algèbre, 04/10)

Size Li (Université Northern Jiaotong, Chine, algèbre, 2004)

Juan Carlos Bustamante (Université de São Paulo, Brésil, algèbre, 04/11 à 05/10)

York University, North York, ON

Other News: Joan Wick Pelletier (who retired Jan 2004) is now the Dean of Arts and Sciences at the State University of New York at Albany.

Bourses CRSNG - SMC Math à Moscou

Le Conseil de Recherches en Sciences Naturelles et en Génie du Canada (CRSNG) et la Société mathématique du Canada (SMC) offrent des bourses de 10,000 \$ chacune. Les étudiantes ou étudiants du Canada inscrit(e)s à un programme de mathématiques ou d'informatique sont éligibles.

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

Programme Math à Moscou
www.mccme.ru/mathinmoscow/

Détails de soumission
www.cms.math.ca/bulletins/Moscou_web/

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

Deux bourses seront attribuées au concours du printemps

Date limite **30 mars 2005** pour le trimestre d'automne 2005



CALL FOR NOMINATIONS

CMS Notes - Editors-in-Chief

The term of office of the present Editors-in-Chief of the CMS Notes, R. Dawson and S. Swaminathan will end December 31, 2005.

The Publication Committee of the CMS invites applications for the next Editor(s)-in-Chief to serve for a five or three year term. Applications should consist of a formal letter of application and a curriculum vitae.

Applications and/or comments should be sent by April 15, 2005 to the address below:

Address for Nominations / Addresse de mise en candidatures:

Juris Steprans, Chair / Président
CMS Publications Committee / Comité des publications de la SMC
Department of Mathematics, York University
N520 Ross, 4700 Keele Street
Toronto, Ontario M3J 1P3
chair-pubc@cms.math.ca

CALL FOR NOMINATIONS

CJM/CMB - Associate Editors

The Publications Committee of the CMS solicits nominations for TWO Associate Editors for the Canadian Journal of Mathematics (CJM) and the Canadian Mathematical Bulletin (CMB). The appointment will be for five years beginning January 1, 2006. The continuing members (with their end of term) are below.

The deadline for the submission of nominations is April 15, 2005.

Nominations, containing a curriculum vitae and the candidate's agreement to serve should be sent to the address below.

Address for Nominations / Addresse de mise en candidatures:

Juris Steprans, Chair / Président
CMS Publications Committee / Comité des publications de la SMC
Department of Mathematics, York University
N520 Ross, 4700 Keele Street
Toronto, Ontario M3J 1P3
chair-pubc@cms.math.ca

CURRENT MEMBERS / MEMBRES ACTUELS

CJM Editors-in-Chief / Rédacteurs-en-chef du JCM

Henri Darmon (McGill) 12/2006; Niky Kamran (McGill) 12/2006.

CMB Editors-in-Chief / Rédacteurs-en-chef du BCM

James Lewis (Alberta) 12/2005; Arturo Pianzola (Alberta) 12/2005;
Noriko Yui (Queen's) 12/2005.

APPEL DE MISES EN CANDIDATURE

Notes de la SMC - Rédacteurs-en-chef

Le mandat des rédacteurs-en-chef actuels des Notes de la SMC, R. Dawson et S. Swaminathan, prendra fin le 31 décembre 2005.

Le Comité des publications de la SMC sollicite les mises en candidature pour le prochain rédacteur-en-chef pour un mandat de trois ou cinq ans. Les mises en candidature doivent inclure une lettre formelle et un curriculum vitae.

Les candidatures et/ou commentaires devraient être acheminés, avant le 15 avril 2005 à:

Address for Nominations / Addresse de mise en candidatures:

Juris Steprans, Chair / Président
CMS Publications Committee / Comité des publications de la SMC
Department of Mathematics, York University
N520 Ross, 4700 Keele Street
Toronto, Ontario M3J 1P3
chair-pubc@cms.math.ca

APPEL DE MISES EN CANDIDATURE

JCM/BCM - Rédacteurs associés

Le comité des publications de la SMC sollicite des mises en candidatures pour DEUX postes de rédacteurs associés du Journal canadien de mathématiques (JCM) et Bulletin canadien de mathématiques (BCM). Le mandat sera de cinq ans et débutera le 1 janvier 2006. La liste des éditeurs qui sont en cours de mandat se trouve ci-dessous..

L'échéance pour proposer des candidats est le 15 avril 2005.
Les mises en candidature, accompagnées d'un curriculum vitae ainsi que du consentement du candidat(e), devrait être envoyées à l'adresse ci-dessous.

Address for Nominations / Addresse de mise en candidatures:

Juris Steprans, Chair / Président
CMS Publications Committee / Comité des publications de la SMC
Department of Mathematics, York University
N520 Ross, 4700 Keele Street
Toronto, Ontario M3J 1P3
chair-pubc@cms.math.ca

Associate Editors / Rédacteurs associés

Steven Boyer (UQAM) 12/2008; Walter Craig (McMaster) 12/2007;
Luc Devroye (McGill) 12/2009; George Elliott (Toronto) 12/2005;
Anthony Geramita (Queen's) 12/2006; Pengfei Guan (McMaster)
12/2008; Victor Kac (MIT) 12/2006; Stephen Kudla 12/2008; M. Ram
Murty (Queen's) 12/2006; Thomas Ransford (Laval) 12/2009; Freydoon
Shahidi (Purdue) 12/2005; Ravi Vakil (Stanford University) 12/2009;
Maciej Zworski (California - Berkeley) 12/2006.

CALENDAR OF EVENTS / CALENDRIER DES ÉVÉNEMENTS

FEBRUARY		2005	FÉVRIER	MAY	2005	MAI
7-9		IMA Tutorial/Workshop: Where Mathematics Meets Industry (University of Minnesota, Minneapolis, MN) visit@ima.umn.edu ; www.ima.umn.edu/matter/	27-31	Annual meeting of the Canadian Mathematics Education Study Group Ottawa University www.cmesg.math.ca		
MARCH		2005	MARS	JUNE	2005	JUIN
2-5		Representing Unresolved Degrees of Freedom for the Atmosphere and Ocean (CRM, Montreal, QC) crm@ere.umontreal.ca	1-5	Stochastic Modelling in Financial Mathematics (CRM, Montreal, Quebec) crm@ere.umontreal.ca		
6-12		International Congress on Algebras, in memory of Kostia Beidar (National Cheng Kung University, Tainan, Taiwan) www.moonstone.math.ncku.edu.tw/AlgebraConference/	4-6	CMS/CSHPM 2005 Summer Meeting / Réunion d'été 2005 de la SMC/SCHPM (University of Waterloo) meetings@cms.math.ca		
19-20		28th Annual Texas PDE Conference (University of Texas, Pan American, Edinburgh, TX) www.math.panam.edu/txpde05/	10-12	Groups, Rings and Algebras, a Conference in honour of Donald S. Passman (University of Wisconsin, Madison, WI) http://condor.depaul.edu/~chin/dsp.htm		
21-25		Workshop on $N = 1$ Compactifications (Fields Institute, Toronto, ON) abrand@fields.utoronto.ca	19-July 8	Random Processes, random matrices and integrable systems (CRM short program) Centre de recherches mathématiques, Université de Montréal, Montreal, Quebec) crm@ere.umontreal.ca		
21-25		Extensions of Hilbert's Tenth Problem, AIM Research Conference Center, Palo Alto, CA) www.aimath.org/ARCC/workshops/Hilberts10th/	JULY	2005	JUILLET	
28-Apr 1		Workshop on String Phenomenology (The Perimeter Institute, Waterloo, ON) abrand@fields.utoronto.ca	4-8	Eighth International Symposium on Generalized Convexity and Monotonicity (Insubria University, Varese, Italy) www.eco.uninsubria.it/gcm8		
28-April 1		28-April 1 Topology and Geometry of the moduli space of curves (AIM Research Conference Center, Palo Alto, CA) http://aimath.org/ARCC/workshops/modspacecurves.html	4-8	Conference on Universal Algebra and Lattice Theory (University of Szeged, Hungary) www.math.u-szeged.hu/conf/algebra		
28-April 1		28-April 1 Topology and Geometry of the moduli space of curves (AIM Research Conference Center, Palo Alto, CA) http://aimath.org/ARCC/workshops/modspacecurves.html	10-13	The 20th Summer Conference on Toplogy and its Applications (Denison University, Granville, OH) sumtopo2005@denison.edu		
APRIL		2005	AVRIL	18-22	VI Brazilian Workshop on Continuous Optimization (West Side Hotel Residence, Goiania, Brazil) vibwco@mat.ufg.br	
6-10		Extracting Macroscopic Information from Molecular Dynamics (CRM, Montréal, Quebec) crm@ere.umontreal.ca	SMS 2005-NATO Advanced Summer Institute: Equidistribution in Number Theory www.dms.umontreal.ca/sms/index.html ; belanger@dms.umontreal.ca			
27-May 1		Multiscale Modelling in Solids (CRM, Montreal, Quebec) crm@ere.umontreal.ca	31-Aug.3	Bridges: Mathematical Connections in Art, Music and Science (The Banff Centre, Banff) http://www.sckans.edu/~bridges/		
MAY		2005	MAI	AUGUST	2005	AOÛT
2-6		Workshop on Gravitational Aspects of String Theory (Fields Institute, Toronto, ON) abrand@fields.utoronto.ca	2-6	Eighth IMS North American New Researchers Conference (Minneapolis, Minnesota) galin@stat.umn.edu		
13-14		6th Mississippi State-UAB Conference on Differential Equations & Computational Simulations; Dedicated to Louis Nirenberg's 80th birthday and Klaus Schmitt's 65th birthday (Mississippi State University, Mississippi State, MS) www.msstate.edu/dept/math/de2005/	17-21	Third Pacific Rim Conference on Mathematics, All Areas of Mathematics (Fudan University, Shanghai, China). c1zhou@fudan.edu.cn www.prcm3.fudan.edu.cn/		
13-15		Frontiers in Applied and Computational Mathematics, All Areas of Applied Mathematics (New Jersey Institute of Technology, Newark, New Jersey, USA) suttons@adm.njit.edu ; www.math.njit.edu/Events/FACM05/	SEPTEMBER		SEPTEMBRE	
14-15		Conference in honor of Heydar Radjavi's 70th Birthday (Hotel Golf, Bled, Slovenia) Damjana.Kokol@FMF.Uni-Lj.SI , www.law05.si/hrc/	26-30	49th Annual meeting of the Australian Mathematical Society (The University of Western Australia, Perth) http://www.maths.uwa.edu.au/~austms05/		
15-18		HPCS 2005: New HPC Culture in Canada, The 19th Annual Symposium on High Performance Computing Systems and Applications (University of Guelph, Guelph, ON) www.scharcnet.ca/events/hpcs2005/	OCTOBER		OCTOBRE	
15-21		ICMI Study15; The Professional Education and Development of Teachers of Mathematics (Aguas de Lindoia, São Paulo, Brazil) dball@umich.edu	17-21	Nonlinear Parabolic Problems (Helsinki, Finland) http://www.math.helsinki.fi/research/FMSvisitor0506		
15-21		43rd International Symposium on Functional Equations (Batz-sur-Mer, France) Nicole.Bellouet@ec-nantes.fr , romanger@us.edu.pl	DECEMBER		DÉCEMBRE	
22-25		ICCS 2005: International Conference on Computational Science, Advancing Science through Computation (Atlanta, GA) ICcs2005@mathcs.emory.edu	10-12	CMS 2005 Winter Meeting / Réunion d'hiver 2005 de la SMC (University of Victoria) meetings@cms.math.ca		
27-31		Rencontre annuelle du Groupe canadien d'études en didactique des mathématiques Université d'Ottawa www.gcedm.math.ca	AUGUST		AOÛT	
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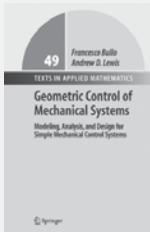
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