



CMS NOTES de la SMC

MESSAGE FROM THE PRESIDENT

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



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More details will follow later, but let me say here that our winter meeting in Victoria was wonderful: there were 395 participants; the mathematics was of very high quality; and the setting was magnificent. Many thanks are due to our terrific hosts, our various sponsors and the staff in Ottawa.

I remind you of our summer meeting in Calgary. Please see the details at: www.cms.math.ca/Events/summer06/

In addition to 12 high-powered symposia and 6 distinguished plenary speakers, we will be awarding the Krieger-Nelson Prize, the Coxeter-James Prize and the CMS Excellence in Teaching Award sponsored by Nelson & Brooks/Cole Businesses.

We are collecting data on our meetings. Again more details will follow, but it is interesting to observe that some 19% of our participants are female, 23% of our participants come from outside the country, and some 70% from outside the host province. These are rough averages from the past three years of meetings.

The CMS plans to host a reception at the ICM 2006 at the Canadian Embassy in Madrid.

Our co-sponsors for the event will include the CRM, the Fields Institute and PIMS. This is part of our on-going efforts to showcase Canadian mathematics and help ensure the strength of the discipline in Canada is recognized internationally.

Our efforts to create a fund-raising arm have been detailed in the *CMS Notes* before. As I write this, we have advertised for a Development Coordinator with interviews to take place shortly. The CMS' budget calls for \$75K in revenue to be generated in the fiscal year 2006.

I am delighted to report that the Imperial Oil Foundation has agreed to continue their lead

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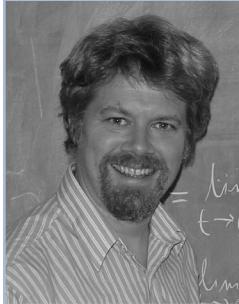


MESSAGE FROM THE VICE-PRESIDENT

In the December 2005 issue of the CMS Notes, the last paragraph of the English version of the Vice-Presidential message by Edwin Perkins was unfortunately omitted. We apologize for this omission; the missing paragraph appears below.

There is a very long list of people who deserve our thanks for the creation and continued support of BIRS from the university administrators at U. Alberta and U. Calgary who helped in convincing the Alberta government to support the project, to the leadership at NSERC, NSF and ASRA who saw the potential value of the proposal and arranged for the appropriate review mechanisms. However, there are two leading members of the Canadian mathematics community who, more than anyone else, are responsible for BIRS' success. Nassif Ghoussoub was the driving force behind the concept and its tri-government funding formula. Robert Moody as its founding Scientific Director ensured that BIRS ran smoothly from its inception at the highest scientific level. They both worked tirelessly for its success and deserve our sincerest thanks.

Edwin A. Perkins, UBC



THOUGHTS AT YEAR'S END

As I write, the American National Hurricane Center reports that the 2005 hurricane season is winding down (we hope) with Hurricane Epsilon. Appropriately, it appears to be a fairly small hurricane (though greater than Tropical Storm Delta!) This is probably just as well; if they had had to retire these names, analysts would have been in great trouble. We trust that the 2005 hurricane season will finally end when Epsilon goes to zero. [In fact, Tropical Storm Zeta continued into the New Year; the 2005 hurricane season did not even end with 2005.]

One more, a year, with its oddities and its peculiarities, with its tragedies and its triumphs, is ending, and a new one is beginning. Across the Northern Hemisphere we approach the Winter Solstice, the festival at which so many cultures find a reason to celebrate with lights to symbolize the turning back of the darkness. Meteorologically and traditionally, the shortest day marks the beginning of winter, not midwinter. For the earth's atmospheres and oceans form a system vast enough that the seasons represent the integral of the sun's warmth, and not the value itself. We are reminded of Winston Churchill's words at the turning of another tide:

"This is not the end. It is not even the beginning of the end. But it is, perhaps, the end of the beginning."

As the days start to lengthen, the winds will continue for a while to get colder. But eventually spring will come. Earlier, of course, in Victoria, but never mind that.

What we set in motion - when we write, when we build, when we teach - often does not show results immediately. The biggest and most significant projects may take decades to bear fruit. There is value in planting oak trees.

Early in the New Year, there will be an election in Canada. It has often been observed that elected governments cannot plan with any certainty past the next election, and as a result tend not to try. This is true to a certain extent; but we, who elect those governments, will still be here. We cannot and must not leave the thinking, the planning, and the dreaming to the politicians. We must be active partners in the process, have something worthwhile to say and make our voices heard.

As we go forwards into the New Year, let us think not only about the year 2006, but about all the other intervals of time that begin along with it. And the best of fortune to all of you.

NOTES de la SMC

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The Editors welcome articles, letters and announcements, which can be sent to the CMS Notes at the address below.

No responsibility for views expressed by authors is assumed by the CMS Notes, the editors or the CMS. The style files used in the production of this volume are a modified version of the style files produced by Waterloo Maple Software, © 1994, 1995.

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ÉDITORIAL

par Robert J. MacG. Dawson
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PENSÉES À LA FIN DE L'ANNÉE

Au moment où j'écris ces lignes, l'American National Hurricane Center nous apprend que la saison des ouragans 2005 devrait prendre fin (espérons-le) après le passage d'Epsilon. Il est tout à fait à propos que cet ouragan soit assez petit, proportionnellement parlant, même s'il est plus imposant que la tempête tropicale Delta. C'est aussi bien ainsi, car si les analystes avaient dû abandonner ces noms, ils auraient été dans un beau pétrin. Nous avons bon espoir que la saison des ouragans 2005 sera terminée dès qu'Epsilon arrivera à zéro. [En fait, la tempête tropicale Zeta a persévéérée jusqu'en 2006; la saison des ouragans 2005 n'a vu sa fin qu'après celle de l'année.]

Une autre année, ponctuée de curiosités, de tragédies et de triomphes, tire à sa fin pour laisser place à une nouvelle. Dans l'hémisphère nord, nous arrivons au solstice d'hiver, ce moment que de nombreuses cultures ont choisi pour célébrer le recul de la noirceur, symbolisé par la lumière. Historiquement – et météorologiquement,

le jour le plus court de l'année marque le début et non le milieu de l'hiver. Car l'atmosphère et les océans terrestres constituent un système suffisamment vaste pour que les saisons représentent l'intégrale de la chaleur du soleil, pas sa valeur. À l'approche d'un nouveau tournant, rappelons-nous les paroles de Winston Churchill :

« Ce n'est pas la fin. Ce n'est même pas le commencement de la fin. Mais, c'est peut-être la fin du commencement. »

Même si les jours allongeront, les vents se refroidiront encore un certain temps. Mais le printemps arrivera bientôt. Un peu plus tôt à Victoria qu'ailleurs, mais n'y pensons pas...

Tout ce que nous mettons en marche – en écrivant, en bâtissant, en enseignant – ne produit pas toujours des résultats immédiats. Les projets les plus ambitieux et importants prennent parfois des dizaines

d'années à porter leurs fruits. Planter un chêne n'est pas peine perdue.

Au début de l'année, le Canada vivra à l'heure des élections fédérales. On a souvent constaté que les gouvernements élus ne pouvaient rien planifier avec certitude au-delà des élections, et que, par conséquent, ils s'y risquaient rarement. Voilà qui est vrai, dans une certaine mesure, mais nous, qui élisons ces gouvernements, serons toujours là après les élections. Nous ne pouvons nous permettre de laisser la réflexion, la planification et les rêves aux mains des politiciens. Nous devons participer activement au processus, tenir des propos cohérents et nous faire entendre.

À l'aube de cette nouvelle année, ne pensons pas seulement à l'année 2006, mais à tout ce qui commencera en 2006. Je vous souhaite à toutes et à tous une excellente année, sous le signe du bonheur.

MESSAGE FROM THE PRESIDENT *continued*

sponsorship role in support of the Math Camps this year, with a significant contribution.

The CMS Math Camps program is also supported by NSERC PromoScience, the three research institutes, some provincial governments and each host university. The camps bring interested and talented young people to various universities across the country each summer where they learn mathematics in a fun and stimulating environment, sharing their interest with other like-minded students from the surrounding region. The program requires the dedicated efforts of a small army of mathematicians from each participating university and schools in the region. The saying "think globally, act locally" applies with precision here.

My role as President often involves seeking out volunteers for our various committees of one sort or another. It is healthy for the Society to involve a diverse group of people. If you are interested in serving your discipline through the CMS, please don't hesitate

to write me at president@cms.math.ca. There is a lot of work to do, and all of it helps advance the cause of mathematics. Your help is really needed.

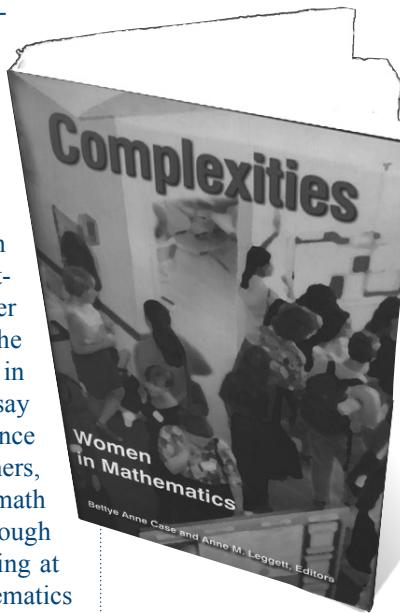
Finally, let me urge readers of the *CMS Notes* to speak to your colleagues, particularly younger members of faculty, about the benefits of joining the CMS. In my view, organizing a symposium in collaboration with a senior colleague at one of our semi-annual meetings is very worthwhile as a way for a younger member of faculty to help build a career. All the ordinary features of such work can be passed on to a new generation: generating an exciting mix of ideas and high quality mathematics by recruiting a diverse group of speakers (students, junior and senior colleagues, men and women). Not only does this work help build friendships and collaborations that can last a lifetime, these activities make for strong tenure and promotion cases in the eyes of Deans, Heads and other administrators.

Complexities: Women in Mathematics

Edited by Bettye Anne Case

and Anne M. Leggett

Princeton University Press 2005, xix + 412 pp



In the May 2005 issue of the Notices of the American Mathematical Society, a commentary piece by Judith Roitman and Carol Wood appears, entitled Opinion: Gender and Mathematics – Again. Surely now that we are in the twenty-first century, the issue of gender discrimination in mathematics and science has been put to rest. Not so, say the authors. Of course, their column begins with a reference to the president of Harvard University, Lawrence Summers, and his speech stating that women can't do first rate math and science for genetic reasons. Their thesis is that although many women mathematicians and scientists are performing at high levels, although about half of undergraduate mathematics degrees in the U.S. and about one third of PhD's in mathematics in the U.S. are awarded to women, still gender schemata, a cluster of expectations based on gender, exist, and affect the climate for women in mathematics in individually small but collectively significant ways. Remarks such as those from the president of Harvard are not just unfortunate slips but they should be taken seriously because they reflect gender schemata. The authors conclude that organizations and programs to support and promote women in mathematics are, sadly, still very necessary.

One of the premier organizations addressing equity issues on behalf of women mathematicians is the Association for Women in Mathematics, AWM, established in 1971. This book is a compendium of AWM memories and material from AWM meetings and the AWM newsletter. For any member of AWM with a stack of yellowing newsletters on their shelf, this book will be a treasure, containing the highlights and history of AWM over the years.

This book chronicles the history of AWM in a collection ranging from articles on pioneering women in mathematics pre-twentieth century to articles on the history and development of AWM, from advice on the two body problem to the mathematics of some eminent women mathematicians, from articles giving relevant statistics and tables measuring changes in the climate of the mathematical community and women's participation there to personal anecdotes of career paths. Inclusion of photos from the 1970s to the present add to the interest of the account. It is a book to dip into from time to time, and it presents an interesting study of a lively and focused organization.

Of course, everyone will have personal favorites among the writings included in this collection. Of the historical articles, I found the stories of women mathematicians before 1900 the most compelling, especially the article on Sophie Germain by Mary W. Gray, based on a talk by Gray at the panel "History of Women in Mathematics", 1976 Summer Joint Mathematics Meetings. Sophie Germain was born in 1776 in Paris, her father a goldsmith, later a member of the Constitutional Assembly, and yet later director of a

bank. During these interesting times, politically and scientifically, it seems the fortunes of the Germain family remained relatively stable. Sophie's academic pursuits progressed from her forbidden nighttime candle-light studies of Newton and Euler (for which she had to teach herself Latin), and of psychology, a lifelong interest, to a correspondence with Lagrange, Gauss, Legendre, Poisson and Fourier, for which she used the pen-name of M. LeBlanc, to her receipt of a prize offered by Napoleon for "giving the mathematical theory of elastic surfaces and comparing it to experimental results", her eventual admission to the lectures of the Ecole Polytechnique and publication of her works on the theory of elastic surfaces and on Fermat's last theorem.

Another favorite of mine is the article by Helen Shapiro on Olga Taussky Todd's work in matrix theory, which combines biographical detail of Taussky Todd's life with a celebration of her research.

This book tells the story of AWM and of its members, presidents and associates over the years. References to the wider world of women mathematicians worldwide exist, for example, in the article "Across Borders", addressing the presence or absence of women speakers at ICM86, and in the note "1996: Women Preside" noting women presidents of mathematical organizations. However, naturally enough, articles are written from the U.S. point of view. For example, Cathleen Morawetz is mentioned often in various articles, having, among other achievements, presented the AWM Noether Lecture in 1983, been president of the AMS in 1996, and presented the Emmy Noether Lecture at the ICM in 1998. However the Krieger-Nelson Lecture, a Canadian award, presented by Cathleen Morawetz in 1997 is not mentioned in this volume.

Of course, the hurdles and problems discussed here are not all unique to women in the mathematical sciences. Articles discussing the tenure process, for example, and how women face special challenges of timing there, could apply to a much wider group of women in academia. Many of the articles citing problems and strategies for women in male dominated professions could apply to women in chemistry, women in physics, and so on. It would be very interesting to include some articles written from the perspective of a larger group.

To sum up, this book presents the story of the AWM and its interests over the past 35 years. Members of the Canadian mathematical community who have been involved in AWM activities will undoubtedly be interested in this collection of articles and others may well find interesting tidbits throughout.

The Pea and the Sun

by Leonard M. Wapner

A.K. Peters, 2005, xiv + 218 pp.

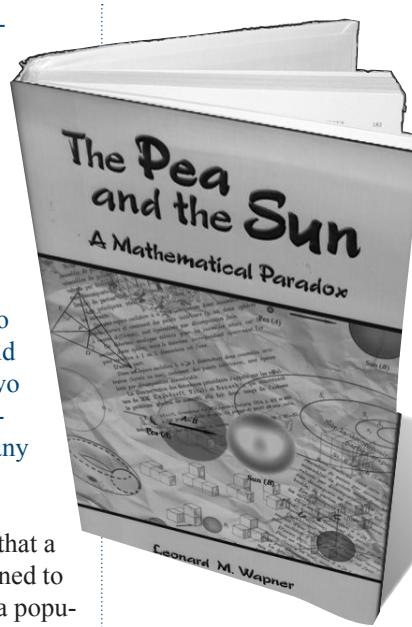
One of the most striking and, on first inspection, most bizarre consequences of the axiom of choice is the Banach-Tarski paradox. This result, which is actually not a paradox at all, states that the ball in three-dimensional space (or even the boundary 2-sphere) can be divided into a finite number of disjoint pieces which can be shifted and rotated isometrically in space and recombined to make two balls (or spheres) of the same radius. In fact, one can perform such a finite partition and rearrangement to obtain any bounded set with interior.

The title of the book comes from the reference to the fact that a pea may be divided into finitely many pieces and recombined to make a ball the size of the sun. The book under review is a popular treatment of the Banach-Tarski paradox for a lay audience. On the whole I found the book to be a pleasant read. I also think that there are some omissions and perhaps curious choices of concluding material. But on the whole, it can be recommended to anyone interested in mathematics who is serious enough to be willing to think about some proofs. It would be suitable for an aspiring high school student. But I would direct an inquiring undergraduate to a more serious treatment such as Stan Wagon's book *The Banach-Tarski Paradox*, Cambridge University Press (1985).

Wapner begins the book with short biographical sketches of Cantor, Banach, Tarski, Gödel and Cohen. He talks about the development of set theory through this history, and explains that the consistency and independence results of Gödel and Cohen help complete our understanding of the Banach-Tarski theorem. I wish that he had returned to this theme at the end of the book.

This is followed by a nice chapter on what a paradox is, and what it means to resolve one. He makes a clear distinction between paradoxes which are actually false (such as the pseudo-proof that all triangles are isosceles), those which are truly contradictory (such as Russell's paradox), and results (such as the one under consideration) which are in fact true and can be explained by deeper analysis.

Then the book launches into the necessary background. There is a gentle introduction to set theory and notions of cardinality. Then he talks about isometries in two and three dimensions. There is a nice digression to talk about polygons which are congruent by dissection, meaning that each can be cut into finitely many triangles which can be paired with congruent triangles from the other. The Wallace-Bolyai-Gerwien Theorem states that any two polygons of the same area are congruent by dissection. He outlines the proof in a few steps leaving the details for the keen reader to work out. This is later used as a device for discussing how one might fix things up on the boundary if one wants a point-by-point pairing.



In the next two chapters he gradually introduces the tools of the proof and gives a complete argument. For a mathematician, the slope seems quite gentle, but there is a long way to go. It is hard for me to judge whether a layperson would make it through. But the author does a careful job and tries to keep things light. Indeed he generally does a good job of presenting the key ideas without getting bogged down in technical details-in spite of the technical nature of the argument.

I only found one serious error to quibble about. His argument that the interval and the square have the same cardinality is flawed, as he does not actually construct a bijection. I think that the details of how to fix it up could be omitted if only he acknowledged that it was necessary.

My real complaint as a mathematician is about what is left out. Set theory is not the only important tool. The other key fact is the existence of non-amenable groups. He avoids this altogether by using a special non-amenable semigroup. However the role of non-amenability and embedding the free group into groups of isometries is another aspect of the picture which is central to any serious study. The existence of such groups is perhaps the real surprise. A bit of discussion about this would have allowed him to make more than just a passing reference to Banach's result that Banach-Tarski decompositions are not possible in lower dimensions.

I must admit that I was not very keen on the "real world" chapter that talks about some speculations by physicists about whether the Banach-Tarski paradox has any application in science. Frankly, it seems absurd to me. I thought that a better approach would be to talk about the necessarily fractal nature of such decompositions. Once one zooms in to a scale much smaller than any conceivable physical particle, the Banach-Tarski decomposition will still look incomprehensibly complicated. That seems to me to be the crux of the case for a lack of physical application.

In spite of these complaints, let me emphasize that I enjoyed reading the book. Wapner reaches out and tries to explain a truly amazing result to an audience without serious mathematical training. He keeps the reader interested and he explains some very interesting things about set theory in particular and mathematics in general.

Generalized Inverses, Theory and Applications Second Edition

by Adi Ben-Israel and Thomas N. E. Greville

CMS Books in Mathematics, Springer 2005, xv + 420 pp.

It is well known that every square non-singular matrix has a unique inverse. If the matrix is singular or even rectangular, no such inverse exists. Yet, in many cases, solutions of a system of linear equations exist even when the inverse of the matrix defining these equations does not. Also, when the equations are inconsistent, least-square solutions (i.e., vectors that minimize the sum of the squares of the residuals) can be obtained. Such equations arise in numerical linear algebra, optimization and control, statistics and other areas of applied mathematics. These can be handled by generalized inverses. By a generalized inverse of a matrix A is meant a matrix X associated in some way with A such that (i) X exists for a class of matrices larger than the class of nonsingular matrices; (ii) X has the properties of the usual inverse; and (iii) X reduces to the usual inverse when A is nonsingular and square.

Ever since the early decades of the last century, different definitions of a generalized inverse (also called general reciprocal or pseudo-inverses) were proposed for different purposes. E. H. Moore's (1920) definition is equivalent to the existence of X such that $AX = P_A$ and $XA = P_X$ where P_Y denotes the orthogonal projector onto the space spanned by the columns of the matrix Y . Unaware of this definition, R. Penrose (1955) showed that there exists a unique matrix X satisfying the four relations: $AXA = A$, $XAX = X$, $(AX)^* = AX$ and $(XA)^* = XA$, where star denotes 'conjugate transpose'. This unique matrix is now commonly called the Moore-Penrose inverse. Penrose proved in 1956 that this generalized inverse possesses the least-square property.

The first edition of the book under review appeared in 1974. It provides a survey of the subject from a unified point of view illustrating the theory with applications of the Moore-Penrose inverse, and also some of the other inverses, in many areas. Since then the field has grown much. The authors say that the second edition "does not pretend to be exhaustive, but seeks to develop and describe in a natural sequence the most interesting and useful kinds of generalized inverses and their properties". For the most part the discussion is limited to finite matrices; extensions to infinite-dimensional spaces and to differential and integral operators are briefly introduced. Exercises at different levels of difficulty are given with solutions to many of them. Among the additions to the second edition are a chapter on preliminaries, another one on applications, an appendix on the work of E. H. Moore, and new exercises. An extensive bibliography is provided.

The book assumes only an elementary knowledge of linear algebra; it can be used either for reference and self study or as a class room text for advanced undergraduates or graduate courses.

Singular Points of Plane Curves

by C. T. C. Wall, LMS Student Texts 63

Cambridge University Press, xi + 370 pp.

The simplest singularities of a plane curve are self-crossings and cusps. Equivalence of singular points of (complex) plane curves can be defined using combinatorial, resolution or topological data, all giving the same result. The first half of this book works up to the synthesis via Puiseaux series (parametrising the curve), resolution of singularities, 'infinitely near points' and the Alexander polynomial. For curves in the projective plane, formulas for the genus and the class depend on the singularities. The topology gives a fibration (due to Milnor), described by the monodromy self-map of the fibre, a compact surface. The monodromy is approached through resolution trees, the group of exceptional cycles, combinatorial data, and the decomposition theorems of Thurston and of Jaco-Shalen-Johannsen. The author obtains a criterion for monodromy to be (setwise) finite and a close relation between the Eggers tree, the resolution graph and the Eisenbud-Neumann diagram. The characteristic polynomials of the monodromy are calculated, the Seifert forms are studied and the signatures that determine it over the reals are calculated.

Ideals in the local ring of a point are related to the cycles studied earlier, and (by Galois correspondence) with clusters of Enriques; this involves valuative and integral closure.

This graduate text gives an introduction to an attractive area of mathematics. By synthesizing different perspectives it offers a novel view and a number of new results.

Each chapter concludes with sections on 'Notes' and 'Exercises'. The notes include historical remarks, references and comments on related material. The exercises are either routine ones on applying the results of the text or problems related to an alternative approach to a topic treated in the text.

Matrix Mathematics: Theory, Facts, and Formulas with Applications to Linear Systems Theory

by Dennis S. Bernstein

Princeton University Press, 2005, xxxvii + 726 pp.

This is a reference work for users of matrices in engineering, science, and applied mathematics. Each chapter begins with the development of relevant background theory followed by a collection of specialized results. Identities, inequalities, and matrix facts are stated rigorously with cross references, citations to the literature and illuminating remarks. Twelve chapters cover the major topics in matrix theory. A detailed list of symbols, a summary of notation and conventions, an extensive bibliography with author index, and an extensive reference list are provided.

**Practical Linear Algebra:
A Geometry Toolbox**

by Gerald Farin and Dianne Hansford
A. K. Peters, 2005, xvi + 384 pp. \$67.

I picked up this book with the thought, ‘oh, another linear algebra text’. I was pleasantly surprised, upon examination, that it is not just another one. The standard linear algebra material is presented with good motivating stories, illustrations and examples. The opening chapter discusses local and global coordinates; it begins with an old German folk tale concerning the burial of a treasure in a lake illustrating that the treasure’s local coordinates do not change as the boat moves, but its global coordinates, defined relative to the lake, do change. The chapter on linear maps in three dimensions starts with the example of a flight simulator.

Emphasizing the geometric viewpoint and the algorithmic way, clear visual representations are provided in every chapter with hand-drawn sketches in the margins. Applications to real-world problems are included in numerous examples. Exercises are given at the end of each chapter; solutions to selected exercises are given in an appendix. More solutions and supplementary teaching materials are made available in the book’s website: <http://vidya.prism.asu.edu/~farin/pla>. Most of the figures are computer generated using PostScript, an easy-to-use geometric language. A tutorial to this language is given in an appendix.

The book can be used at the freshman/sophomore level for engineers or computer scientists and also as an introduction to geometry. It is also an ideal preparation for computer graphics and geometric modeling.



REGISTRATION

CMS Summer
2006 Meeting

April 30, 2006

INSCRIPTION

Réunion d’été 2006
de la SMC

30 avril 2006

**WANTED:
Books for Review**

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

**Sneaking a Look at God’s Cards: Unraveling
the Mysteries of Quantum Mechanics
Revised Edition**

by Giancarlo Ghirardi
Princeton University Press, 2005, xxii + 488 pp. \$35.

Quantum mechanics has the reputation of being an esoteric subject. Yet it underlies many technological innovations such as nuclear energy, semiconductors, current computers and superconductors. Giancarlo Ghirardi, who is well known for his original contributions to the subject, offers the general reader in this well written book a deep and real understanding of the problems inherent to the interpretation of quantum mechanics from its inception to the present. Beginning with a discussion of the difficulties that the scientific community had to face early in the last century he shows how a group of scientists were able to lift the veil that hid the surprising realities of the world. The dialogues and disagreements between Niels Bohr and Albert Einstein are discussed in detail and a balanced overview of current debates is presented. The Einstein-Podolsky-Rosen argument, Bell’s inequality and non-locality, quantum cryptography, and quantum computers are all treated in separate chapters. The last chapter, with ‘Conclusions’ as the title, provides a succinct summary of the book.

Since the book does not use the standard mathematical formalism of the subject, it can be read profitably by anyone who wishes to understand the development and impact of quantum mechanics. Each chapter opens with an apt quotation from an expert author.

Errata

In the December 2005 Notes article by Jonathan Dorwein and David Bailey, “Future Prospects for Computer-Assisted Mathematics”, the first formula on page 3 (column 2) was mis-typeset.

The correct quantity on the right hand side of the formula is $L_7(2)$ where L_7 is a primitive Dirichlet L-series.

**RECHERCHÉS :
Livres pour critiques littéraires**

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CMS Awards Announcement / Lauréats des Prix de la SMC

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

The most significant achievement of Kathy Heinrich in the area of mathematics education is the idea for a Canadian Mathematics Education Forum as a venue for people interested in mathematics education at all levels: mathematicians, math educators, teachers of mathematics from every level, representatives of school boards, ministries of education, industry, and parents, to meet and talk together about issues of common interest.

The first Forum, held in Québec City in 1995, set the stage for many activities that followed. In British Columbia, Forum participants organized the BC Mini-forum for Education in Mathematics (December 1995). This event led to the Pacific Institute for the Mathematical Sciences “Changing the Culture” annual conference, which, for the past eight years, has brought together people interested in math education. In Ontario, the spirit of the 1995 Forum is continued with the Fields Institute Mathematics Education Forum.

In 2001, the Canadian Mathematical Society revived Kathy Heinrich’s Forum concept. The second Forum took place in Montréal (hosted by UQAM) in May 2003 and the third Forum (hosted by the Fields Institute) was held in May 2005. Many new initiatives have grown out of these Fora. A new Canada-wide teachers’ organization is being created and Canadian indigenous people are becoming partners in the discussions on mathematics education. These Fora are on the verge of becoming an institution.

The inspiration for the 1995 Forum arose from Kathy Heinrich’s significant involvement in mathematics education and the promotion of mathematics. In 1982 she organized the first Mathematics Enrichment Conference for grade 11 students at Simon Fraser University. This three-day event, which continued annually for the next 15 years, provided inspiration to generations of British Columbia students. Kathy Heinrich was a co-organizer of “Women Do Math” (later renamed “Discover the Possibilities”), a mathematics conference designed to reach girls in grades 9 and 10 and a co-organizer of “Math in the Malls”, a series of displays with hands-on activities, organized in several Vancouver area shopping malls in the early 1990s. She took an active role in lobbying to have Mathematics as a category at Canada Wide Science Fairs. Her legacy of involvement in mathematics education continues to be felt across the country.

Dr. Katherine Heinrich received her Ph.D. in mathematics from the University of Newcastle, Australia, in 1979. In 1981, she joined the Department of Mathematics and Statistics at Simon Fraser



University as an Assistant Professor on a Natural Sciences and Engineering Research Council of Canada (NSERC) University Research Fellowship. She was promoted to the rank of Professor in 1987 and, from 1991-1996, was Chair of the Department. From 1999, she has held the position of Vice-President (Academic) at the University of Regina.

During the last several years Kathy Heinrich has served as a member of the Interim Governing Council of the

University of Northern British Columbia, the Board of Governors of Simon Fraser University, the Youth Science Foundation of Canada and the Canadian Mathematical Society. She was President of the Canadian Mathematical Society from 1996 to 1998. For six years she served as a member of the BC Science Council Awards Committee. Recently she was a member of an NSERC Grant Selection Committee and the National Killam Selection Committee. She is currently a member of the NSERC Council.

In 1995, she was awarded both the Vancouver YWCA Woman of Distinction Award in Education, Training and Development and the University of Newcastle Gold Medal for Professional Excellence.

Her research interests include graph factoring problems, the design and application of Latin squares and more generally the “mathematics of arrangements” that enable the construction of computer networks, scheduling of tournaments and secure transmission of information.

Le prix Adrien-Pouliot rend hommage aux personnes ou aux groupes qui ont fait une contribution importante et soutenue à l'éducation mathématique au Canada

La principale contribution de Kathy Heinrich à l'éducation mathématique est l'organisation du Forum canadien sur l'enseignement des mathématiques, qui a réuni des gens qui s'intéressent à l'éducation mathématique à tous les niveaux – mathématiciens, professeurs et enseignants, représentants de conseils et de commissions scolaires, ministères de l'Éducation, industriels ou parents – pour discuter d'enjeux communs.

Le premier Forum, tenu à Québec en 1995, a donné le coup d'envoi à de nombreuses autres activités. En Colombie-Britannique, les personnes qui avaient participé à ce Forum ont organisé un mini-forum sur le même thème en décembre 1995. Suite à cette activité, l'Institut du Pacifique pour les sciences mathématiques a organisé un congrès annuel sur le thème « Changer la culture » qui, depuis huit ans, réunit des personnes qui s'intéressent à l'éducation mathématique. En Ontario, l'esprit du Forum de 1995

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se transpose dans le Forum sur l'enseignement des mathématiques de l'Institut Fields.

En 2001, la Société mathématique du Canada a repris le concept de forum proposé par Kathy Heinrich. Le second Forum s'est donc tenu à Montréal (à l'UQAM) en mai 2003, et le troisième, à l'Institut Fields, en mai 2005. Un grand nombre d'autres activités ont découlé de ces forums. Une nouvelle association pancanadienne d'enseignants a été créée, et des autochtones du Canada prennent part aux discussions sur l'enseignement des mathématiques. Ces forums sont pratiquement devenus une institution.

L'idée du Forum de 1995 était une suite logique de tout ce que Kathy Heinrich a fait pour l'éducation mathématique et la promotion des mathématiques. En 1982, elle a organisé le premier congrès sur l'enrichissement mathématique pour les élèves de 11e année à l'Université Simon Fraser. Ce congrès de trois jours, qui s'est tenu chaque année par la suite pendant 15 ans, a été une source d'inspiration pour des générations d'élèves britanno-colombiens. Kathy Heinrich a aussi participé à l'organisation d'un congrès appelé Women Do Math (renommé Discover the Possibilities), congrès visant l'intégration des filles de 9e et de 10e année, ainsi qu'une série d'expositions d'activités interactives connue sous le nom de « Pleins feux sur les mathématiques », dans plusieurs centres commerciaux de Vancouver au début des années 1990. Elle a beaucoup insisté pour faire reconnaître les mathématiques comme catégorie à l'Expo-sciences pancanadiennes. Sa contribution soutenue à l'éducation mathématique se fait toujours sentir dans l'ensemble du pays.

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

The referees describe Robert McCann as a “creative, deep and dynamic mathematician”. In the ten years since he graduated from Princeton, he has become one of the leading figures in the area of optimal transportation and its many applications. His work balances very “pure” and rigorous contributions to deep mathematics with the discovery of new applications to image recognition, atmospheric circulation patterns, and the kinetic theory of granular media. He is considered to be one of the most innovative geometric analysts of his generation.

In his 1994 Princeton dissertation, Dr. McCann introduced an extremely original interpolation technique into the calculus of variations, based upon Y. Brenier's polar factorization of vector fields. In recent years this breakthrough has motivated a lot of research into the fundamental inequalities of mathematical physics and geometry.



Katherine Heinrich a reçu son doctorat en mathématiques de l'Université de Newcastle (Australie) en 1979. En 1981, elle est entrée au Département de mathématiques et de statistique de l'Université Simon Fraser comme professeure associée grâce à une bourse de recherche du Conseil de recherches en sciences naturelles et en génie du Canada (CRSNG). Elle est devenue professeure titulaire en 1987 et elle a dirigé le département de 1991 à 1996. Depuis 1999, elle est vice-rectrice aux études à l'Université de Regina.

Au cours des dernières années, Kathy Heinrich a été membre du conseil d'administration intérimaire de l'University of Northern British Columbia, du conseil des gouverneurs de l'Université Simon Fraser, de la Fondation sciences jeunesse Canada et de la Société mathématique du Canada, qu'elle a présidée de 1996 à 1998. Elle a en outre été membre du comité des prix du conseil scientifique de la C.-B. pendant six ans. Dernièrement, elle a siégé au comité de sélection des subventions du CRSNG et au comité de sélection national du prix Killam. Elle siège en ce moment au conseil d'administration du CRSNG.

En 1995, elle a reçu le prix Femmes de mérite du YWCA de Vancouver (éducation, formation et développement) et la médaille d'or pour excellence professionnelle de l'Université de Newcastle.

Côté recherche, elle s'intéresse particulièrement aux problèmes de factorisation des graphes, à la conception et à l'application des carrés latins et, plus généralement, aux « mathématiques des arrangements » qui permettent la construction de réseaux informatiques, l'établissement d'horaires de tournois et les échanges sécurisés d'information.

In recent years he has been at the forefront of the progress in Monge-Kantorovich mass transfer theory. Dr. McCann's joint work with Caffarelli and Feldman uses geometric measure theory and analysis to contribute to the solution of Monge's original transportation problem, an unsolved problem for over 200 years.

Over the past years, Dr. McCann has also collaborated with many others on a wide variety of related problems, motivated by applied problems in image processing, mathematical economics, and meteorology. An extensive survey documenting his central contributions is contained in C. Villani's recent book on Optimal Transportation.

Dr. McCann graduated from Queen's University in 1989 with a B.Sc. degree and obtained his Ph.D. from Princeton University in 1994. From 1994 to 1998, he was the Tamarkin Assistant Professor at Brown University and held an NSERC Postdoctoral Fellowship from 1994 to 1996 and an American Mathematical Society Centennial Fellowship from 1996 to 1998.

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In 1998, he joined the University of Toronto as an Associate Professor and was promoted to Full Professor in 2004.

He was awarded the Monroe H. Martin Prize in Applied Mathematics in 2001 and, together with Caffarelli, Evans, Feldman, and Gangbo, has held two National Science Foundation Focused Research Group Grant (2000 - 2007).

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

Les examinateurs ont dit de Robert McCann qu'il était un « mathématicien créatif, réfléchi et dynamique ». Depuis la fin de ses études à Princeton il y a dix ans, il est devenu l'une des figures dominantes du domaine du transport optimal et de ses nombreuses applications. Ses travaux sont un mélange de mathématiques très « pures » et rigoureuses, et de nouvelles applications en reconnaissance d'image, en schémas de déplacement nébuleux atmosphérique et en théorie cinétique des matériaux granulaires. Il est considéré comme l'un des analystes-géomètres les plus novateurs de sa génération.

Dans sa thèse déposée à Princeton en 1994, Robert McCann a introduit une technique d'interpolation extrêmement originale en calcul des variations basé sur la factorisation polaire de champs de vecteurs de Y. Bernier. Au cours des dernières années, ses percées ont motivé les recherches sur les inégalités fondamentales de la physique mathématique et de la géométrie.

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

The Canadian Mathematical Society is delighted to award the 2005 Doctoral Prize to Dr. Vasilisa Shramchenko for her work on Frobenius manifolds associated with Hurwitz spaces of branched covers. The work is situated at the crossroads of many areas and disciplines, requiring deep and broad knowledge that she masterfully commands.

The reviewers refer to her work as “a great surprise” and declare that the impact and originality of her contribution is “outstanding”. She uses an analytical approach to objects of classical algebraic geometry that stems from classical theories and is enhanced by contemporary constructions. Besides providing a wealth of results, she poses important questions and problems, answers to which would further extend her “major breakthrough” in the area of Frobenius manifolds and would greatly enhance our understanding. She has already published several papers, with



Il est en outre à l'avant-plan des progrès réalisés dans la théorie du transport de masse de Monge-Kantorovich. Ses travaux en collaboration avec Caffarelli et Feldman utilisent la théorie et l'analyse de la mesure géométrique pour contribuer à la résolution du problème initial de transport posé par Monge il y a plus de 200 ans et qui demeure non résolu.

Ces dernières années, il a aussi collaboré avec de nombreuses autres personnes à toutes sortes de problèmes connexes, motivé par des problèmes appliqués en traitement de l'image, en économie mathématique et en météorologie. Une enquête exhaustive qui documente ses contributions clés se trouve dans le dernier ouvrage de C. Villani sur le transport optimal.

Robert McCann a obtenu son baccalauréat dès sciences de l'Université Queen's en 1989 et son doctorat de Princeton en 1994. Il a été titulaire de la chaire de professeur associé Tamarkin à l'Université Brown de 1994 à 1998, il a reçu une bourse de recherche du CRSNG de 1994 à 1996 ainsi que la bourse de recherche Centennial de l'American Mathematical Society de 1996 à 1998.

Il est arrivé à l'Université de Toronto à titre de professeur agrégé en 1998 et il est devenu professeur titulaire en 2004.

Il a reçu le prix Monroe H. Martin de mathématiques appliquées en 2001. Avec Caffarelli, Evans, Feldman et Gangbo, il a en outre décroché deux subventions de recherche ciblée de la National Science Foundation (2000 - 2007).

more accepted for publication. She clearly has an impressive career ahead of her.

Dr. Vasilisa Shramchenko received her Honours Diploma as a Mathematician and Mathematics teacher in 2000 from St. Petersburg State University in the Department of Probability and Statistics. She pursued graduate studies in the Department of Mathematics and Statistics at Concordia University and completed her Ph.D. under the direction of Professor Dmitry Korotkin in October 2004. Her thesis was entitled “Frobenius Structures, Integrable Systems, and Hurwitz Spaces”.

Le Prix de doctorat de la SMC récompense le travail exceptionnel d'un étudiant ou d'une étudiante au doctorat ayant obtenu un diplôme d'une université canadienne.

La Société mathématique du Canada est enchantée de remettre son Prix de doctorat 2005 à Vasilisa Shramchenko pour ses recherches sur les variétés de Frobenius associées avec les espaces de revêtements ramifiés de Hurwitz. Ses travaux se situent à la

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croisée de nombreux domaines et disciplines, ce qui exige des connaissances à la fois approfondies et générales, qu'elle maîtrise admirablement.

Les examinateurs ont qualifié son travail de « grande surprise » et ont affirmé que les répercussions et l'originalité de ses travaux étaient « exceptionnelles ». Elle utilise une approche analytique des objets de la géométrie algébrique classique qui émane des théories classiques, lesquelles sont améliorées par des constructions contemporaines. En plus de proposer des résultats de toutes sortes, elle pose des questions et des problèmes importants dont les réponses approfondiraient encore davantage son importante contribution au domaine des variétés de Frobenius ainsi que

The G. de B. Robinson Award was inaugurated to recognize the publication of excellent papers in the Canadian Journal of Mathematics and the Canadian Mathematical Bulletin and to encourage the submission of the highest quality papers to these journals.

The 2005 G. de B. Robinson Award is awarded to Dr. Yu-Ru Liu, University of Waterloo, for her two papers entitled “A Generalization of the Turán Theorem and its Applications”, and “A Generalization of the Erdős-Kac Theorem and its Applications”, which were published in the Canadian Mathematical Bulletin in 2004.

A classical theorem of Hardy and Ramanujan states that the normal number of prime divisors of a natural number n is $\log \log n$. Their difficult proof was simplified by Turan in 1934 and was subsequently amplified by Erdős and Kac in their monumental creation of probabilistic number theory. In her two papers, Liu shows that the theorems of Turan, as well as the subsequent generalizations by Erdős and Kac, apply to a wider geometric context. Most notable is the application to the study of points on varieties over finite fields. The papers represent an elegant mélange of probability theory, analytic number theory and algebraic geometry.

Dr. Yu-Ru Liu obtained her Bachelors degree from McGill University in 1997 and she completed her Masters degree at Queen's University in 1998. Under the direction of Barry Mazur, she completed her doctoral work at Harvard University in 2003. The two papers which appeared in the Canadian Mathematical Bulletin in 2004 are based upon her doctoral thesis. Dr. Liu currently holds a University Faculty Award at the University of Waterloo.

notre compréhension du sujet. Elle a déjà publié un bon nombre d'articles, et plusieurs autres articles ont déjà été acceptés. Il ne fait nul doute qu'elle a devant elle une carrière prometteuse.

Vasilisa Shramchenko a obtenu son baccalauréat spécialisé en mathématiques et enseignement des mathématiques en 2000 de l'Université d'État de Saint-Pétersbourg, Département de probabilité et de statistique. Elle a poursuivi ses études supérieures au Département de mathématiques et de statistique de l'Université Concordia et a obtenu son doctorat, sous la direction de Dmitry Korotkin, en octobre 2004. Sa thèse s'intitule : Frobenius Structures, Integrable Systems, and Hurwitz Spaces.



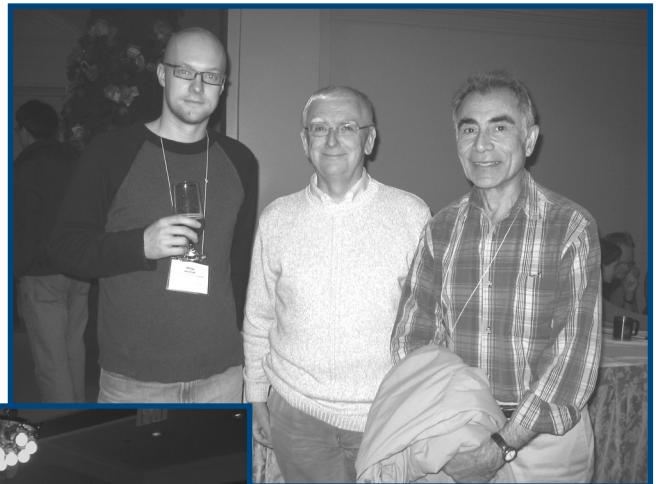
Le prix G. de B. Robinson rend hommage aux mathématiciens qui se sont distingués par l'excellence de leurs articles parus dans le Journal canadien de mathématiques et le Bulletin canadien de mathématiques, et vise à encourager la présentation d'articles de première qualité pour ces revues.

Le prix G. de B. Robinson est décerné à Yu-Ru Liu, University of Waterloo, pour ses articles intitulés « A Generalization of the Turán Theorem and its Applications » et « A Generalization of the Erdős-Kac Theorem and its Applications », publiés dans le Bulletin canadien de mathématiques en 2004.

Selon un théorème classique de Hardy et Ramanujan, le nombre normal de diviseurs entiers d'un nombre naturel n est $\log \log n$. Leur preuve complexe a été simplifiée par Turan en 1934, puis amplifiée par Erdős et Kac dans leur création monumentale : la théorie probabiliste des nombres. Dans ses deux articles, Mme Liu montre que les théorèmes de Turan, tout comme les généralisations subséquentes d'Erdős et de Kac, s'appliquent à un contexte géométrique plus étendu. Ils s'appliquent en particulier à l'étude de points, à la conception et à l'application des carrés latins et, plus. Les articles sont un mélange élégant de théorie des probabilités, de théorie analytique des nombres et de géométrie algébrique.

Yu-Ru Liu a obtenu son baccalauréat de l'Université McGill en 1997 et sa maîtrise de l'Université Queen's en 1998. Sous la direction de Barry Mazur, elle a terminé ses études doctorales à Harvard en 2003. Les deux articles publiés dans le Bulletin canadien de mathématiques en 2004 sont basés sur sa thèse de doctorat. Mme Liu détient une bourse du Programme d'appui aux professeurs universitaires de l'Université de Waterloo sur sa thèse de doctorat. Mme Liu détient une bourse du Programme d'appui aux professeurs universitaires de l'Université de Waterloo.

Memories of Victoria / Mémoires de Victoria



CMS Prizes and awards Prix de la SMC

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

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

MESSAGE DU PRÉSIDENT

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

Vous en entendrez parler plus tard, mais permettez-moi de vous dire pour l'instant que notre Réunion d'hiver à Victoria a été couronnée de succès : 395 participants, des mathématiques de très grande qualité et un emplacement magnifique. Mille mercis à nos hôtes exceptionnels, à nos commanditaires et au personnel du bureau d'Ottawa.

Je vous rappelle que la prochaine Réunion d'été se tiendra à Calgary. Pour plus de détails, passez au : www.cms.math.ca/Reunions/ete06/

En plus des douze sessions de haut calibre et des six conférenciers pléniers au programme, nous remettrons à cette occasion le prix Krieger-Nelson, le prix Coxeter-James et le Prix d'excellence en enseignement de la SMC, commandité par Nelson & Brooks/Cole.

Nous compilons en ce moment des données sur nos Réunions, dont nous vous reparlerons bientôt, je le répète, mais voici tout de même quelques statistiques intéressantes : environ 19 % de nos participants sont des femmes, 23 % viennent de l'étranger et à peu près 70 % sont de l'extérieur de la province hôte. Ce sont là des moyennes approximatives de nos congrès des trois dernières années.

La SMC prévoit tenir une réception lors du CIM 2006 à l'ambassade du Canada à Madrid. Nos partenaires dans l'organisation de cet événement sont le CRM, l'Institut Fields et le PIMS. Cette initiative s'ajoute à nos efforts pour faire connaître l'activité mathématique canadienne et en faire valoir la vitalité et la qualité sur la scène mondiale.

Comme vous l'avez déjà lu dans les Notes, nous travaillons depuis quelque temps à la création d'une section du financement à la SMC. Au moment où j'écris ces lignes, nous avons lancé un concours pour un poste de coordonnateur ou coordonnatrice du développement, pour lequel nous tiendrons des entrevues sous peu. Au cours de l'exercice 2006, il faudra générer 75 000 \$ pour équilibrer le budget de la SMC.

Je suis très heureux de vous apprendre que la Fondation philanthropique Pétrolière Impériale a accepté de demeurer commanditaire principal de nos camps mathématiques de cette année grâce à une imposante contribution. Les camps mathématiques de la SMC reçoivent aussi l'appui du programme PromoScience du CRSNG, des trois instituts de recherche, de quelques gouvernements provinciaux et des universités hôtes. Les camps attirent des jeunes intéressés et talentueux dans des universités d'un peu partout au pays durant l'été et leur permettent d'enrichir leurs connaissances mathématiques dans un contexte divertissant et stimulant, et de partager leur passion des mathématiques avec d'autres étudiants de la région. L'organisation du programme fait appel aux efforts d'une petite armée de mathématiciens de chaque université participante et des écoles environnantes. Le dicton « penser mondialement, agir localement » s'applique on ne peut mieux à ce programme.

À titre de président, je suis souvent appelé à chercher des bénévoles pour divers comités. Il est sain pour la Société de faire participer des gens de tous horizons. Si vous avez le goût de travailler à l'avancement de votre discipline par l'entremise de la SMC, n'hésitez pas à m'écrire à president@smc.math.ca. Ce n'est pas le travail qui manque, et chaque petite contribution sert la cause des mathématiques. Nous avons grandement besoin de votre aide.

Enfin, je vous incite vivement à faire valoir les avantages de l'adhésion à la SMC auprès de vos collègues, en particulier des nouveaux membres de vos facultés. À mon avis, l'organisation d'un symposium en collaboration avec un collègue expérimenté à l'une de nos Réunions semestrielles est une excellente façon de faire progresser la carrière d'un nouveau venu dans la profession. La personne expérimentée peut ainsi transmettre son bagage de connaissances à une nouvelle génération : il en résultera un mélange d'idées vivifiantes et de mathématiques exceptionnelles issu de la réunion d'un groupe diversifié de conférenciers (étudiants, collègues d'expérience et débutants, hommes et femmes). De telles activités donnent naissance à des amitiés et à des collaborations qui durent parfois toute une vie, sans compter qu'elles pèsent lourd dans un dossier de permanence ou d'avancement aux yeux de doyens, chefs de département et autres administrateurs.

SÉMINAIRE DE MATHÉMATIQUES SUPÉRIEURES 2006

/NATO ADVANCED STUDY INSTITUTE

Université de Montréal - 45th session

COMBINATORIAL OPTIMIZATION: METHODS AND

APPLICATIONS

JUNE 19-30 2006

LECTURERS

Gérard Cornuéjols (Carnegie Mellon U) - Mixed integer programming; Sanjeeb Dash (IBM T. J. Watson Research Center) - Mixed integer rounding cuts and cyclic group polyhedra; Friedrich Eisenbrand (Max-Planck-Institut für Informatik) - My favorite open problems in integer programming; Lisa K. Fleischer (Carnegie Mellon U) - Generalized congestion games; Michael X. Goemans (Massachusetts Institute of Technology) - Approximation Algorithms; Yuri Kochetov (Russian Academy of Sciences) - Facility location problems, Discrete models and local search methods; Bernhard Korte (U. of Bonn) - Making chips faster; Gleb Koshevoy (Russian Academy of Sciences) - Discrete convexity and its applications in combinatorics and combinatorial optimization; Shmuel Onn (Technion-Israel Institute of Technology) - Convex combinatorial optimization; Dieter Rautenbach (U. of Bonn) - Optimization and timing in VLSI design; Najiba Sbihi (École Mohammadia) - Mathematics of supply chain management; Jens Vygen (U. of Bonn) - Combinatorial optimization in VLSI placement and routing.

This summer school is aimed primarily at doctoral students, postdoctoral fellows, and junior faculty. Financial support available.

For full consideration, requests for participation or financial assistance must be received before February 28, 2006.

INFORMATION - APPLICATION: <http://www.dms.umontreal.ca/sms/>; belanger@dms.umontreal.ca

ALL ABOUT ALGEBRA

To the question as to what is the essential background for tertiary mathematics, we would most likely respond, “algebra”. This is the language of higher mathematics and an essential tool for manipulating ideas and information. This also happens to be a subject that many secondary students find difficult and at which they do not become fluent.

The readers of this column have internalized the use of algebra so that its constructs and rules are natural and solid. Just as we cannot remember a time when the written words of our native language were gibberish, so we can hardly recall when algebraic expression was not at our disposal when we needed it. It is hard to realize what a great human achievement was the advent of algebra and the depth of the underlying philosophical, epistemological, semiotic and mathematical issues that accompany it.

The Twelfth *ICMI (International Commission on Mathematical Instruction) Study on The Future of the Teaching and Learning of Algebra* thoroughly explored all of this. Its Study Conference, held from December 9 to 14, 2001, in Melbourne, Australia brought together 110 experts from around the globe, including ten from Canada: Nadine Bednarz, Carolyn Kieran, Caroline Lajoie and Asuman Oktaç, all from the Université de Québec à Montréal; George Gadanidis from the University of Western Ontario, Claude Gaulin and Bernard Hodgson from Laval University, Israel Kleiner from York University and Rina Zazkis from Simon Fraser University, along with Lesley Lee, then at the Pacific Resources for Education and Learning in Hawaii. The highlights of the conference were the plenary address, *The core of algebra: Reflections on its main activities* by Carolyn Kieran, and two plenary panels, *Algebra around the world* and *Why algebra? What algebra?* The conference was followed by the publication of the Study Volume that reproduced the plenary address and reported on the activities of the working groups:

The Future of the Teaching and Learning of Algebra: the 12th ICMI Study

Editors: Kaye Stacey, Helen Chick, Margaret Kendal
Kluwer Academic Publishers, Holland, 2004 xiv+371
pages ISBN HB: 1-4020-8130-8; E-book: 1-4020-8131-6

This is one of the most useful books in mathematics education that I have encountered. It looks at algebra from a comprehensive viewpoint; the reader becomes acquainted with the current thinking on the teaching of algebra and the variety of ways that it is handled in different jurisdictions.

Taking her cue from the results of a survey of members of the mathematical community on the nature of algebra, Carolyn Kieran presented a model of algebraic activity that embraced three main components: generational activity, transformational activity, and global/meta-level activity. The first of these treats the formation of expressions and equations that describe situations, properties, patterns and relations. Transformational activities involve manipulations such as factoring, expansion and substitution.

Although Kieran does not make this point, it is helpful to regard an algebraic expression as a carrier of information, some of it manifest from its form and some latent. The goal of algebraic transformation is to bring to light what you need to know for the problem you want to solve, something that requires considerable judgment. Global/meta-level activities include the solving of problems, construction of models, analyzing structures and relationships - things that place algebra in a larger context and provide focus and purpose. I appreciated her comment on the balance between the rote nature of algebraic manipulation and the sense of control that the user can and should maintain:

One of the strengths of algebra is that, for experts, a great deal of its transformational activity can be carried out in what appears to be a rather automated manner. Once one makes the transformation rules one's own, the algorithms of algebra can be executed, in a sense, without thinking. But not really; for ... every algebraic manipulation contains an anticipatory element, a sense of direction in which you want to be going and of what the desired expression will look like once you get there. (p. 24-25)

In her review of the teaching of algebra during the twentieth century, Kieran observed that it was realized in the 1970s and 1980s that the transition from arithmetic to algebra was not as straightforward as people had thought. This spawned a movement to focus more on the meaning of symbols, often at the expense of technical facility which then did not simply emerge as a matter of course. French research led to a deeper understanding of the complexity of the dialectic between technical and conceptual work, the “epistemic role of technique” and the perception of “techniques as a link between tasks and conceptual reflection, rather than as something that should be eliminated in the learning of mathematics”. In closing, the speaker saw “the future of algebraic thinking and learning as one geared toward giving meaning not only to the objects of algebra but also to its manipulative processes, and this with the help of technology. ... The fact that conceptual understanding can come with technique will surely put the study of algebraic transformations among the fruitful and interesting areas of research to be carried out in algebra learning during the years to come.”

The last chapter of the book documents the lack of uniformity in the teaching of algebra across the globe. The age at which algebra is introduced and the nature of the experience depends on how and when students are streamed. An examination of curriculum documents demonstrates that, variously, algebra is conceived as

- *a way of expressing generality and pattern (strongly evident in British Columbia, England, Victoria, Singapore);*
- *a study of symbol manipulation and equation solving (Brazil, France, Germany, Hong Kong, Hungary, Israel, Italy, Russian Federation);*

- *a study of functions and their transformations (France, Hungary, Israel, Japan, the Netherlands, USA);*
- *a way to solve problems (usually word problems) beyond the reach of arithmetic methods (Czech Republic, France, Hungary, Italy, Japan, Hong Kong, Singapore);*
- *a way to interpret the world through modelling real situations, precisely or approximately (Quebec, England, Netherlands, Victoria);*
- *a formal system, possibly dealing with set theory, logical operations, and operations on entities other than real numbers (Singapore, Hungary). (p. 335)*

These approaches are briefly described with some sample problems. They can generate strikingly different responses to questions on international assessments. For example, take questions L12 and R12 from the Third International Mathematics and Science Study (Repeat 1999):

L12. *In a sequence of starts and stops, an elevator travels from the first floor to the fifth floor and then to the second floor. From there, the elevator travels to the fourth floor and then to the third floor. If the floors are 3m apart how far has the elevator travelled?*

- A. 18m B. 27m C. 30m D. 45m .

70% of Australian students got this correct, as compared with 59% in the Russian Federation and 53% internationally.

R12. *If k represents a negative number, which of these is a positive number?*

- A. k^2 B. k^3 C. $2k$ D. $\frac{1}{2}k$.

Here, 81% of the Russian Federation students got it right, as against 34% of Australian students and 47% of all students. The success of Australian and Russian students over all items was similar, but the Australians did better on *Number patterns and simple relations* (represented by L12), while the Russians excelled on *Simple algebraic expressions* (represented by R12). (p. 343)

Readers of these **CMS Notes** would have a special interest in the chapter provided by the *Teaching and Learning of Tertiary Algebra Working Group*, which discusses in particular linear algebra, abstract algebra, number theory and discrete mathematics. What are the conceptual difficulties of students at this level? Some have difficulty working with symbolic logic and quantification. Some do not appreciate the importance of definitions, and cannot support them with their conceptual understanding nor use them. Some do not appreciate the construction of proof and its role in accepting the validity of results. Some cannot tolerate abstraction nor work with hypothetical situations.

One section of this chapter deal with the motivation (or lack thereof) of students to engage algebra and proposes the following research questions:

- Is there a relationship between enthusiasm for a particular mathematical topic and the effective learning of the concepts behind it?
- Why are some students motivated to learn abstract concepts and others not?
- What are the roles of previous and anticipated success in student learning?
- What are the differences between teachers' and students' ideas of what is motivating?
- What would assist pre-service teachers in seeing the relationship between tertiary algebra and the secondary algebra they will be teaching?

Finally, the chapter turns to pedagogy. E. Dubinsky and M. McDonald use APOS (*Action-Process-Object-Schema*) theory based on constructivism. Certain mental structures are specified and a student who constructs them should be able to learn the concept; instruction following a cycle of activities, classroom discussion and exercises, is designed to realize these constructions. This approach has been successfully applied to courses in abstract algebra and discrete mathematics, and is currently part of the design of a linear algebra course. An alternative approach is to discover empirically what is effective. Other issues in tertiary instruction have to do with the amount of content in the syllabus and the role of technology.

Alternatives to the standard lecture-tutorial regime such as on-line learning, distance education, cooperative learning, exploitation of history are being tried and need further study. The Working Group feels that the time is ripe for a document that describes the current situation and recommends further changes with a program of scientific evaluation of effectiveness. The Group would like to address the relationship between tertiary and secondary algebra. Unlike with analysis, “students often perceive courses in tertiary algebra (especially abstract algebra) as something completely unrelated to their previous mathematical experience. ... the tertiary emphasis on structure can seem removed from earlier encounters with solving equations and graphing”. Students need to see an integrated picture.

If algebra presents difficulties for tertiary learners, is the solution to be found in an earlier introduction of algebra at school? If we pay attention to how children think and learn, the answer, according to the Working Group on Early Algebra, appears to be yes. Taking “early algebra” to refer to the introduction of algebraic thinking, rather than to formal algebra, it appears that students as young as seven can profit from this innovation. Until the early 1990s, research in algebra education focussed on difficulties of pupils; since then, the emphasis has changed to what is possible. Research began to indicate that young children were capable of more than was expected; the perspective on algebraic thinking evolved and new technologies were explored. Indeed, children come to school already with a natural ability to express generality and one needs to find out how to access this. For example, one can look at arithmetic statements as representing a type of relationship. One working group examined various approaches to the teaching

of algebra, while another looked at research on the role of technological environments and multiple ways of representing algebraic artifacts. Apart from intrinsic reasons, review of the algebraic syllabus is forced upon us by the very fact that education is now practically universal up to the mid-teen years, The technical algebra of yesteryear needs to be succeeded by an algebra that is intelligible and useful to everyone.

The Working Group on Goals for the Compulsory Years looked at a number of reasons given for the study of algebra: a requirement for being an educated person in modern society, background for later study of mathematics and employment, a crucial component of mathematical literacy, efficient solution of certain problems, promotion of the intellectual activities of generalization, organized thinking and deductive reasoning. The group decided that, from the outside, none of these appears to be persuasive. Yet they argue that algebra does have a place, but that it must be “interesting and satisfying for its own sake as well as for its utility”. Algebra should be a “powerful friend with extraordinary explanatory powers” rather than as a feared enemy (p. 324). Students should gain confidence in interpreting algebraic formulae, recognizing structure, dealing with sundry representations of functions, handling situations involving linear and exponential functions and trying things out.

A deeper appreciation of algebra arises from a close examination of its history and development, and from the analysis of algebra as a language and system of signs; Gottlob Frege, who authored an 1892 article on “Science and Meaning” was a pioneer in the latter. Both of these dimensions were explored by working groups.

One important emblem of the power of algebra got a most cursory mention in the volume, namely its function as a proof technique. Consider the situation in which one starts with two arbitrary positive numbers as the initial terms of a sequence, and continues the sequence in which each term is one more than its predecessor, divided by the term before that. An example:

$$2 \ 5 \quad \frac{5+1}{2} = 3 \quad \frac{4}{5} \quad \frac{3}{5} \quad 2 \ 5 \ 3 \ \dots$$

One discovers that, inevitably, the sequence has period 5, but there is no proof of this fact with infinitely many instances in the realm of arithmetic. However, we can achieve a proof algebraically by starting with “placeholders” x and y and getting the cycle $x, y, (y+1)/x, (x+y+1)/(xy), (x+1)/y$.

This is a critical period in mathematics education. Because of social forces and developments within our discipline, everything is up for review. This ICMI Study performs an invaluable service in describing where we are and projecting a program of further investigation.

CALL FOR CONTRIBUTIONS

I would like to highlight educational initiatives in departments across Canada. If you are a chair or an undergraduate secretary, you will know what your department is doing well. Please ask the colleagues involved to write an article describing it and send it to the editor at barbeau@math.utoronto.ca. Also, please send us information about teaching awards that individuals in your department have received, whether locally, provincially or nationally.

EMPLOYMENT OPPORTUNITY - University of Freiburg (Switzerland)

The Department for Mathematics at the University of Freiburg (Switzerland) invites applications for the following positions:

1. Senior Assistant in Analysis and its Applications

It is part of the duties of the senior assistant to teach 4 to 6 hours a week on all levels, mainly in analysis. An intensive research activity is expected. She or he will supervise master theses, coach seminars, and participate in administrative tasks of the department.

The successful candidate will have earned a Ph.D. in mathematics, show strong promise of excellence in teaching, and have a strong research record. The position starts October 1, 2006.

2. Doctor assistant in applied mathematics

This is a postdoc position with teaching duties. Preference will be given to candidates in the field of numerical analysis/statistics. Good knowledge of scientific computing and willingness to participate in statistical consulting is expected. The position starts September 1, 2006.

Both positions are limited to five years. The candidates are supposed to master French or German and to understand the other language. Send letter of application, current vita, references and research plan to the address below before March 1, 2006. For additional information, please contact also

Prof. Dr. Norbert Hungerbuhler

Department of Mathematics
University of Freiburg, Perolles
CH-1700 Freiburg, Switzerland

norbert.hungerbuehler@unifr.ch
www.unifr.ch/math

CMS Summer 2006 Meeting

Host: University of Calgary
Westin Hotel, Calgary, Alberta
June 3 – 5, 2006

On behalf of the University of Calgary, the Department of Mathematics and Statistics invites the mathematical community to the Summer 2006 Meeting of the Canadian Mathematical Society (CMS).

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

All activities and scientific talks will be held at the Westin Hotel and the Delta Bow Valley Hotel.

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

Prizes and Awards

CMS Krieger-Nelson

Penny Haxell (Waterloo)

CMS Coxeter-James
to be determined

CMS Excellence in Teaching
to be determined

Plenary Speakers

Charalambos Aliprantis (Purdue)

Steve Awodey (Carnegie Mellon)

John Conway (Princeton)

Nicole El Karoui (Ecole Polytechnique, Paris, France)

Alexander S. Kechris (California Institute of Technology)

Dave Marker (Illinois at Chicago)

Business Meetings

The CMS will be holding the following business meetings:

Executive Committee Meeting:

Thursday, June 1, Westin Hotel

Development Group Luncheon:

Friday, June 2, Delta Bow Valley

Board of Directors Meeting:

Friday, June 2, Delta Bow Valley

CMS Annual General Meeting:

Sunday, June 4, Westin Hotel

Social Events

The CMS will be holding the following social events:

Welcoming Reception: Friday, June 2, Delta Bow Valley

Participants' Social: Saturday, June 3, Westin Hotel

Banquet: Sunday, June 4, Heritage Park

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

Exhibits

Exhibits will be open from 9:30 am to 4:00 pm on Saturday and Sunday in the registration area.

The **Joint Exhibit** features books and other products from publishers and other companies and organizations not represented at the meeting. Order forms will be available at the exhibit for your convenience. 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.

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

An **Information Table** will be set up in the registration area to display 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, 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 pm 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

For abstracts of talks to be published on-line and in the meeting programme, they have to be submitted by April 10, 2006, using the on-line form at cms.math.ca/forms/abs-s06. The organizers appreciate the cooperation of all speakers in observing this important deadline.

Registration

The registration form is also available at www.cms.math.ca/Events/ and from:

CMS Executive Office

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

Payment 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 by April 30 in order to qualify for reduced rates. In order for your payment to be processed before the meeting, it has to be received by May 26. Receipts will be provided at the meeting.

	Reduced rate	Regular rate
Prize Lecturer (incl. 2 free banquet tickets)	\$ 0	\$ 0
Plenary and Public Lecturer (incl. 1 free banquet ticket)	\$ 0	\$ 0
Member CMS/AMS/MAA	\$ 235.00	\$ 305.00
Non-Member (incl. free CMS Membership for 2006)	\$ 385.00	\$ 455.00
Session Organizer/Speaker	\$ 235.00	\$ 305.00
Postdoc	\$ 130.00	\$ 170.00
Teacher (K-12, CEGEP, College)	\$ 95.00	\$ 125.00
Retired	\$ 95.00	\$ 125.00
Student	\$ 75.00	\$ 95.00
Unemployed	\$ 95.00	\$ 125.00
One-day fee (available onsite only)	n/a	\$ 175.00
Banquet	\$ 60.00	\$ 60.00

CMS = Canadian Mathematical Society

AMS = American Mathematical Society

MAA = Mathematical Association of America

Advantages to Pre-Registration:

- reduced fees for early registration until April 30
- your name appears on the list of participants on the meeting web site
- your Meeting Package is waiting for you at the reception on Friday evening
- no waiting in line early Saturday morning to process your registration!
- banquet tickets are available now but may no longer be available on site

Refund Policy

Participants wishing to cancel their registration must notify the CMS Executive Office in writing by May 26 to receive a refund less a \$40 processing fee. Those whose contributed paper has not been accepted will upon request be fully refunded.

Accommodation

It is recommended that 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. 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.

Westin Hotel

Booking deadline: April 30, 2006

Group code: Canadian Mathematical Society

Please use the link provided on our web site for your room reservation

320 4th Avenue SW, Calgary T2P 2S6

Phone 403-266-1611, toll free 1-800-937-8461

Fax 403-233-7471

Rates (single or double occupancy):

Traditional Main Building - \$135.00, Tower Deluxe - \$162.00, Junior Suite - \$205.00

\$20.00 per night for each additional person, maximum occupancy per room is 4 people.

Applicable taxes: 7% GST, 5% Provincial Room Tax

Children:

No charge for children up to age 18 who share a room with their parents; children under 12 get a gift bag at check in; a kids club menu is available in the Terrace restaurant.

Child Care:

The Front Desk can provide contact information for child care services.

Parking:

Weekday: Self parking - \$19, Valet parking - \$27

Weekend: Self parking - \$10, Valet Parking - \$15

Check-in: 3:00 pm

Check-out: 1:00 pm

Delta Bow Valley

Booking deadline: April 30, 2006

Group code: GLMATH

209-4th Avenue S.E., Calgary, Alberta T2G 0C6

Phone: 403-266-1980, toll free 1-877-814-7706

Fax 403-205-5460

Rates (single or double occupancy):

Premier Room - \$124.00, Deluxe Room - \$134.00,

Deluxe Premier Room - \$149.00

\$15.00 per night for each additional person, maximum occupancy per room is 4 people.

Children:

No charge for a maximum of 2 children up to age 18 who share a room with their parents. Children 6 years and under can enjoy a complimentary meal with an accompanying adult who is enjoying an entrée. Children 7 - 12 years of age may enjoy 50% off our adult menu with children size portion when an accompanying adult is enjoying an entree with them. The restaurant also offers a children's menu at \$5.95 with all entrees.

Child Care:

The Hotel offers a Children's Creative Centre on weekends (Saturday & Sunday). Children can enjoy games, crafts, and fun in a supervised environment. This service is complimentary during your stay. Please contact the hotels directly for further information regarding child care. Advance research and arrangements are recommended.

Parking:

Monday-Thursday: Self Parking - \$14; Valet Parking - \$17
Friday to Sunday: Self-Parking - \$8; Valet Parking - \$11

Check-in: 3:00 pm

Check-out: 12:00 pm

Travel

A taxi fare from the airport to downtown costs approximately \$28.00.

Airport Shuttle Express: one-way - \$12.00 (plus taxes), round trip - \$20.00 (plus taxes)

Reservations for the airport shuttle must be made before hand.

Detailed information regarding the University of Calgary, the city of Calgary, and the Province of Alberta, 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 Calgary** (www.ucalgary.ca)
- **Tourisme Calgary** (www.tourismcalgary.com)
- **Travel Alberta** (www.travelalberta.com)
- **Canada Weather Forecast**
(www.weatheroffice.ec.gc.ca)

Graduate Student Support

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

This letter should be sent before April 10, 2006 to **gradtravel-s06@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-s06@cms.math.ca**.

Sponsors

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.

- University of Calgary
- le Centre de Recherches Mathématiques
- The Fields Institute
- MITACS
- Pacific Institute for the Mathematical Sciences

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

CALL FOR SITES *DEMANDES DE PROPOSITIONS D'EMPLACEMENTS*

Interested in hosting a CMS Meeting?

The summer and winter meeting sites are confirmed to the year 2008 (Summer Meeting - see *Calendar of Events*). The CMS Research Committee invites requests from departments interested in hosting a CMS Meeting for Winter 2008 onwards. The head of the department should write to the chair.

Êtes-vous intéressés à être l'hôte d'une réunion de la SMC?

Les lieux des réunions d'été et d'hiver sont confirmés jusqu'à l'an 2008 (réunion d'été - voir le calendrier des événements). Le Comité de la recherche de la SMC invite les départements intéressés à tenir l'une de ces réunions en hiver 2008 ou plus tard à soumettre une proposition. Les chefs de département intéressés doivent soumettre leur propositions au président.

Dr. J.F. Jardine, Chair/Président

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

Réunion d'été 2006 de la SMC

Hôte: Université de Calgary
Hôtel Westin, Calgary (Alberta)
June 3 – 5, 2006

Au nom de l'Université de Calgary, le Département de mathématiques et de statistique souhaite inviter la communauté mathématique à la Réunion d'été 2006 de la Société mathématique du Canada (SMC).

Conformément au format habituel, la Réunion comprendra une grande diversité de sessions, une séance de communications libres, des conférences principales, et des conférences de lauréats. Toutes les activités, y compris celles du programme scientifique, se dérouleront à l'hôtel Westin et à l'hôtel Delta Bow Valley.

Vous trouverez l'information la plus récente sur les programmes, y compris les horaires détaillés, les formulaires d'inscription et les formulaires électroniques pour l'envoi des résumés sur le site web de la Réunion au www.smc.math.ca/Events/f.

Prix

Prix Krieger-Nelson de la SMC

Penny Haxell (Waterloo)

Prix Coxeter-James de la SMC

À déterminer

Prix d'excellence en enseignement de la SMC

À déterminer

Conférenciers pléniers

Charalambos Aliprantis (Purdue)

Steve Awodey (Carnegie Mellon)

John Conway (Princeton)

Nicole El Karoui (École Polytechnique, Paris, France)

Alexander S. Kechris (California Institute of Technology)

Dave Marker (Illinois à Chicago)

Séances de travail

La SMC tiendra les séances de travail suivantes :

Comité exécutif :

le jeudi 1^{er} juin, Hôtel Westin

Lunch du groupe de développement :

le vendredi 2 juin, Delta Bow Valley

Réunion du conseil d'administration :

le vendredi 2 juin, Delta Bow Valley

Assemblée générale du la SMC :

le dimanche 4 juin, Hôtel Westin

Activités sociales

La SMC tiendra les activités sociales suivantes :

Réception d'accueil : le vendredi 2 juin, Delta Bow Valley

Rencontre des participants : le samedi 3 juin, Westin Hotel

Banquet : le dimanche 4 juin, Heritage Park

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

Expositions

Le salon des exposants sera ouvert de 9 h 30 à 16 h le samedi et le dimanche, dans l'aire d'inscription.

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.

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

Un **kiosque de renseignements** sera également 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), Canada K1N 6N5, fax : (613) 565-1539, courriel : reunions@smc.math.ca.

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

Pour pouvoir publier votre résumé en ligne et dans le programme de la Réunion, nous devons le recevoir au plus tard le 10 avril 2006 au moyen du formulaire électronique au cms.math.ca/forms/abs-s06. Les organisateurs remercient les conférenciers de bien vouloir respecter cette importante échéance.

Inscription

Vous pourrez vous procurer le formulaire d'inscription au www.smc.math.ca/Events/f ou au :

Bureau administratif de la SMC

577, ave. King-Edward, Ottawa (Ontario) CANADA K1N 6N5

Tél. : 613-562-5702, Fax : 613-565-1539, bureau@smc.math.ca

Vous pouvez payer 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. Dans le tableau, les prix sont indiqués en dollars canadiens.

Le paiement doit nous parvenir à Ottawa au plus tard le 30 avril 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 26 mai. Les reçus seront remis à la Réunion.

	Prix réduit	Prix régulier
Conférencier primé (2 billets pour le banquet incl.)	0 \$	0 \$
Conférencier princ./pop. (1 billet pour le banquet incl.)	0 \$	0 \$
Membre SMC/AMS/MAA	235,00 \$	305,00 \$
Non-membre (adhésion gratuite à la SMC pour 2006)	385,00 \$	455,00 \$
Organisateurs/conférenciers de session	235,00 \$	305,00 \$
Étudiants postdoctoraux	130,00 \$	170,00 \$
Enseignants (prim.-sec., cégep, collège)	95,00 \$	125,00 \$
Retraités	95,00 \$	125,00 \$
Étudiants	75,00 \$	95,00 \$
Sans-emploi	95,00 \$	125,00 \$
Frais d'une journée (disponible sur place seulement)	s/o	175,00 \$
Banquet	60,00 \$	60,00 \$

SMC = Société mathématique du Canada

AMS = American Mathematical Society

MAA = Mathematical Association of America

Avantages de la préinscription :

- Tarifs réduits pour les personnes qui s'inscrivent au plus tard le 30 avril
- 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

Politique de remboursement

Les participants qui désirent annuler leur inscription doivent en aviser le bureau administratif de la SMC par écrit avant le 26 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.

Hébergement

Nous recommandons fortement aux participants de réserver. 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 précèdent 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.

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.

Hôtel Westin

Date limite de réservation : 30 avril 2006

Code de groupe : Société mathématique du Canada

Veuillez utiliser le lien sur notre site Web pour faire votre réservation

320 4th Avenue SW, Calgary T2P 2S6

Téléphone : (403) 266-1611, sans frais : 1-800-937-8461

Fax : (403) 233-7471

Tarifs (une ou deux personnes) :

Édifice principal traditionnel – 135 \$,

Tour – de luxe – 162 \$, Suite « junior » - 205 \$

20 \$ la nuit par personne additionnelle,
4 personnes par chambre maximum.

Taxes applicables : 7 % TPS, 5 % Taxe
provinciale d'hébergement

Enfants :

Aucuns frais pour les enfants de moins de 18 ans qui partagent la chambre de leurs parents; les enfants de moins de 12 ans recevront un sac-cadeau à l'arrivée; le restaurant Terrace offre des menus pour enfants.

Stationnement :

Semaine : stationnement par le propriétaire – 19 \$,
service voiturier – 27 \$

Fin de semaine : stationnement par le propriétaire – 10 \$,
service voiturier – 15 \$

Arrivée : 15 h

Départ : 13 h

Services de garde :

Renseignez-vous auprès de la réception
au sujet des services de garde.

Delta Bow Valley

Date limite : 30 avril 2006

Code de groupe : GLMATH

209-4th Avenue S.E., Calgary, Alberta T2G 0C6

Téléphone : (403) 266-1980, sans frais 1-877-814-7706

Télécopieur : (403) 205-5460

Tarifs (une ou deux personnes) :

Chambre supérieure (« Premier ») – 124 \$,
de luxe – 134 \$, supérieure de luxe – 149 \$

15 \$ la nuit par personne additionnelle,
4 personnes par chambre maximum.

Enfants :

Aucuns frais pour les enfants de moins de 18 ans qui partagent la chambre de leurs parents. Les enfants de 6 ans et moins ont droit à un repas gratuit lorsqu'ils sont accompagnés d'un adulte qui commande un repas principal. Les enfants de 7 à 12 ans ont droit à une réduction de 50 % sur les menus pour adulte (portion pour enfants), lorsqu'ils sont accompagnés d'un adulte qui commande un repas principal. Le restaurant offre aussi un menu pour enfants à 5,95 \$ avec tous les repas principaux.

Stationnement :

Du lundi au jeudi : stationnement par le propriétaire – 14 \$, service voiturier – 17 \$

Du vendredi au dimanche : stationnement par le propriétaire – 8 \$, service voiturier – 11 \$

Arrivée : 15 h

Départ : 12 h

Services de garde :

L'hôtel offre des activités structurées pour enfants les samedis et dimanche : jeux, bricolage et divertissements dans un milieu supervisé. Ce service est offert gratuitement durant votre séjour.

Veuillez communiquer directement avec les hôtels pour vous renseigner sur les services de garde. Nous vous recommandons de faire vos démarches et vos réservations à l'avance.

Déplacements

Le trajet en taxi de l'aéroport au centre-ville coûte environ 28 \$.

Navette de l'aéroport : sens unique – 12 \$ (plus taxes), aller-retour – 20 \$ (plus taxes)

Il faut faire une réservation pour la navette de l'aéroport.

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

- University of Calgary (www.ucalgary.ca)
- Tourisme Calgary (www.tourismcalgary.com)
- Travel Alberta (www.travelalberta.com)
- Service météorologique du Canada (www.weatheroffice.ec.gc.ca)

Subventions pour étudiants diplômés

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

Cette lettre doit parvenir à la SMC avant le 10 avril 2006 par courriel (gradtravel-s06@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, veuillez communiquer avec le comité de coordination à l'adresse suivante : gradtravel-s06@smc.math.ca.

Commanditaires

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

- Université de Calgary
- Centre de recherches mathématiques
- Institut Fields
- MITACS
- Institut Pacific

La Société mathématique du Canada tient à remercier les membres du Comité de coordination.



**CMS Summer
2006 Meeting**

April 30, 2006

**Réunion d'été 2006
de la SMC**

30 avril 2006

CMS Summer 2006 Meeting/Réunion d'été 2006 de la SMC

THURSDAY/JEUDI June 1 juin	SATURDAY/SAMEDI June 3 juin	SUNDAY/DIMANCHE June 4 juin	MONDAY/LUNDI June 5 juin
6:00 PM – 10:00 PM Executive Committee Meeting Réunion du Comité exécutif (Westin Hotel)	8:00 – 5:00 Registration/Inscription 9:30 – 4:00 Exhibits/Exposants	8:00 – 5:00 Registration/Inscription 9:30 – 4:00 Exhibits/Exposants	8:00 – 4:00 Registration/Inscription
	8:30 – 9:00 Opening/Ouverture	8:00 – 10:00 Special Sessions	8:00 – 10:00 Special Sessions
	9:00 – 9:50 Plenary Lecture Conférence plénière		
FRIDAY/VENDREDI June 2 juin			10:00 – 10:30 Break/Pause
11:00 AM – 1:00 PM Development Group Luncheon Lunch du groupe de développement (Delta Hotel, Salon A)	10:30 – 11:30 Special Sessions	10:30 – 11:30 Special Sessions	10:30 – 11:30 Special Sessions
	11:30 – 12:20 Plenary Lecture Conférence plénière	11:30 – 12:20 Plenary Lecture Conférence plénière	11:30 – 12:20 Plenary Lecture Conférence plénière
	12:30 – 2:00 Lunch Break	12:30 – 2:00 CMS Annual General Meeting	12:30 – 2:00 Lunch Break
	2:00 – 2:45 Krieger Nelson Prize Lecture	2:00 – 2:45 Coxeter James Award Lecture	2:00 – 2:45 Plenary Lecture Conférence plénière
	2:45 – 3:45 Special Sessions	2:45 – 3:45 Special Sessions	2:45 – 3:45 Special Sessions
1:30 – 6:30 Board of Directors Meeting Réunion du conseil d'administration de la SMC (Delta Hotel, Salon B/C)			3:45 – 4:00 Break/Pause
	4:00 – 5:00 Special Sessions	4:00 – 5:30 Plenary Lecture Conférence plénière	4:00 – 6:00 Special Sessions
	5:00 – 6:00 Excellence in Teaching Prize Lecture		
	6:00 – 7:00 Participants' Social	6:00 – 7:00 Reception (cash bar) Réception (bar payant) (Heritage Park, Wainwright Hotel)	
7:00 – 9:00 Welcoming Reception Réception d'accueil (Delta Hotel, Garden Patio)		7:00 – 10:00 Banquet (Heritage Park, Wainwright Hotel)	

For the latest schedule details please visit the web site: www.cms.math.ca/events

La version la plus récente du programme est en ligne au www.cms.math.ca/reunions

SESSIONS

By invitation of the Meeting Committee, there will be sessions in the following areas. 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. 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.

Category Theory

Théorie des catégories

Org: Robin Cockett (Calgary)

Differential Equations and Dynamical Systems

Équations différentielles et systèmes dynamiques

Org: Elena Braverman (Calgary), Michael Y. Li (Alberta)

Discrete and Convex Geometry

Géométrie discrète et convexe

Org: Karoly Bezdek (Calgary), Jozsef Solymosi (UBC)

Education Session, in conjunction with CMESG

Session d'éducation, conjointement avec le GCEDM

Org: Peter Taylor (Queen's)

Game Theory / Number Theory in Honour of Richard Guy's 90th Birthday

Théorie des jeux et des nombres en l'honneur du 90e anniversaire de Richard Guy

Org: Richard Nowakowski (Dalhousie), Bill Sands,
Hugh Williams, Robert Woodrow (Calgary)

L-functions, Automorphic Forms and Representation Theory

Théorie de la représentation, formes automorphiques, et fonctions L

Org: Amir Akbary (Lethbridge), C. Cunningham (Calgary)

Mathematical Finance

Finance mathématique

Org: Len Bos, Anatoliy Swishchuk (Calgary)

Model Theory

Théorie des modèles

Org: Patrick Speissegger (McMaster)

Positivity in Functional Analysis and Applications

Positivité en analyse fonctionnelle et applications

Org: Charalambos Aliprantis (Purdue),
Vladimir Troitsky (Alberta)

Recent Work in History of Mathematics

Travaux récents en histoire des mathématiques

Org: Tom Archibald (SFU)

Set Theory and Infinitary Combinatorics

Théorie des ensembles et combinatoire infinie

Org: Stevo Todorcevic (Toronto)

Symmetry in Geometry

Symétrie en géométrie

Org: Ted Bisztriczky (Calgary), Ferenc Fodor (Szeged, Hungary;
Calgary), Richard K. Guy (Calgary), Asia Weiss (York)

Contributed Papers

Communications libres

Org: To be determined

Contributed papers of 20 minutes duration are invited. There will be a maximum of 20 papers in this session.

For an abstract to be eligible, the abstract, the contributor's registration form, and payment of registration fees have to be received before April 10, 2006. 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.

Nous lançons un appel de communications libres de 20 minutes chacune. Un maximum de 20 communications libres seront acceptées.

Les résumés devront nous parvenir au plus tard le 10 avril 2006, 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.

EMPLOYMENT OPPORTUNITY

Concordia University's Department of Mathematics & Statistics - Four teaching appointments

Concordia University's Department of Mathematics & Statistics is seeking applications for up to four appointments to teach courses in areas that include: **Analysis, Numerical Analysis, Dynamical Systems, Optimization, Probability and Statistics.**

These positions are subject to budgetary approval and need, and are full-time, Limited-Term Appointments, beginning August 15, 2006 and ending May 31, 2007. Appointments will normally be at the rank of Lecturer or Assistant Professor. Successful candidates will normally be expected to teach three courses per semester. Under the provisions of the CUFA collective agreement, these positions may be renewed twice subject to continued need. **Please forward all applications and questions to the appropriate Department contact listed below. Review of applications will begin as they are received and will continue until all required positions have been filled.**

Candidates for all positions should hold a completed or nearly completed PhD. Applications should consist of a **letter of intent, a curriculum vitae, copies of recent publications, a statement of teaching interests, evidence of teaching effectiveness, if available, and three letters of reference.** All qualified candidates are encouraged to apply; however, Canadians and permanent residents will be given priority. Concordia University is committed to employment equity. Information about the Faculty of Arts and Science and about each department can be found at: <http://artsandscience1.concordia.ca>

Professor Y.P. Chaubey
Chair, Department of Mathematics and Statistics
chair@mathstat.concordia.ca

NEWS FROM DEPARTMENTS

Université de Sherbrooke

Appointment: Virginie Charette (Professeur adjoint, géométrie) s'est joint au département le 1er juillet 2005.

Awards/Distinctions: David Smith (étudiant au doctorat en algèbre sous la supervision d'Ibrahim Assem) s'est vu décerné la Médaille Carl Herz (2004-2005).

Visitors: Récemment, le département a accueilli les postdocs, étudiants stagiaires au doctorat et visiteurs de longue durée suivants : Juan Carlos Bustamante (postdoc, Universidad San Francisco de Quito (Ecuador), algèbre, 04/11 à 05/08); Sara Derivière (postdoc, Université de Rouen (France), systèmes dynamiques, 05/09 à 06/08); Bernt Tore Jensen (postdoc, Université de Trondheim (Norvège), algèbre, 05/08 à 06/08); Ralf Schiffler (postdoc, University of Massachusetts at Amherst (É.-U.), algèbre, 05/04 à 05/09); Xiuping Su (postdoc, Université de Berne (Suisse), algèbre, 05/08 à 05/10); Mohammad Jafari Jozani (stagiaire, Shahid Beheshti University (Iran), statistique, 05/09 à 06/08); Carlos de la Mora (stagiaire, Texas University, É.U., algèbre, 05/05 à 05/07); Amir Payandeh (stagiaire, University of New Brunswick, statistique, 05/04 à 06/08); Philippe Caldero (Université de Lyon, France, algèbre, 05/06); Fabrice Colin (Université Laurentienne, analyse, 05/05 à 05/06); Marian Mrozek (Université Jagellonne, Pologne, topologie, 05/05); Idir Ouassou (ENSA-Marrakech, Maroc, statistique, 05/04); Bernard Wagneur (topologie, 05/09 à 05/08)

CMS Winter 2006 Meeting	CMS/MITACS Summer 2007 Meeting	CMS Winter 2007 Meeting	CMS Summer 2008 Meeting
University of Toronto December 9 - 11, 2006 Sheraton Centre Toronto	University of Manitoba June 2007 Winnipeg, Manitoba	University of Western Ontario December 8 - 10, 2007 London, Ontario	CRM June 2008 Montréal, Québec

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

2007

Le prix Coxeter-James rend hommage à l'apport exceptionnel à la recherche de jeunes mathématiciens. Il est possible de proposer la candidature d'une personne qui a obtenu son doctorat il y a au plus dix ans. Les propositions pourront être mises à jour et demeureront actives pendant un an, à moins que la mise en candidature originale ne corresponde à la dixième année d'obtention du doctorat. La personne choisie présentera sa conférence à la Réunion d'hiver. Les lettres de mise en candidature devraient inclure les noms d'au moins trois répondants possibles ainsi qu'un curriculum vitae récent, si disponible. Le récipiendaire doit être membre de la communauté mathématique canadienne.

The Coxeter-James Prize Lectureship recognizes young mathematicians who have made outstanding contributions to mathematical research. Nominations may be made up to ten years from the candidate's Ph.D. A nomination can be updated and will remain active for a second year unless the original nomination is made in the tenth year from the candidate's Ph.D. The selected candidate will deliver the prize lecture at the Winter Meeting. Nomination letters should include at least 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 Jeffery-Williams Prize Lectureship

2008

Le prix Jeffery-Williams rend hommage à l'apport exceptionnel à la recherche de mathématiciens d'expérience. Les propositions pourront être mises à jour et demeureront actives pendant trois ans. La conférence sera présentée à la Réunion d'été. Les lettres de mise en candidature devraient inclure les noms d'au moins trois répondants possibles ainsi qu'un curriculum vitae récent, si disponible. Le récipiendaire doit être membre de la communauté 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

2008

Le prix Krieger-Nelson rend hommage à l'apport exceptionnel à la recherche de mathématiciennes. Les propositions pourront être mises à jour et demeureront actives pendant deux ans. La conférence sera présentée à la Réunion d'été. Les lettres de mise en candidature devraient inclure les noms d'au moins trois répondants possibles ainsi qu'un curriculum vitae récent, si disponible. Le récipiendaire doit être membre de la communauté mathématique canadienne.

The Krieger-Nelson Prize Lectureship recognizes outstanding research by a female mathematician. A nomination can be updated and will remain active 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 2006. Faire parvenir vos lettres à l'adresse suivante :**

The deadline for nominations is **June 30, 2006. Letters of nomination should be sent to the address below.**

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

The 2006 Krieger-Nelson and Coxeter-James Prizes will be presented at the CMS Summer 2006 Meeting in Calgary, Alberta, June 3 to 5.
Les prix Krieger-Nelson et Coxeter-James 2006 seront présentés à la Réunion d'été 2006 de la SMC à Calgary (Alberta) du 3 au 5 juin.

CALL FOR NOMINATIONS / APPEL DE MISES EN CANDIDATURE

Prix Adrien-Pouliot Prize Lectureship

2006

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

Les candidatures doivent nous être transmises via le « Formulaire de mise en candidature » disponible au site Web de la SMC : www.cms.math.ca/Prix/info/ap. Pour garantir l'uniformité du processus de sélection, veuillez suivre les instructions à la lettre. Toute documentation excédant les limites prescrites ne sera pas considérée par le comité de sélection.

Il est possible de renouveler une mise en candidature présentée l'an dernier, pourvu que l'on en manifeste le désir avant la date limite. Dans ce cas, le présentateur n'a qu'à soumettre des documents de mise à jour puisque le dossier original a été conservé. Les mises en candidature doivent parvenir au bureau de la SMC avant le **30 avril 2006**. Veuillez faire parvenir vos mises en candidature en six exemplaires à l'adresse ci-dessous :

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

Nominations must be submitted using the Nomination Form available from the CMS Web site at: www.cms.math.ca/Prizes/info/ap. To assure uniformity in the selection process, please follow the instructions precisely. Documentation exceeding the prescribed limits will not be considered by the Selection Committee.

Individuals who made a nomination in 2004 can renew this nomination by simply indicating their wish to do so by the deadline date. Only materials updating the 2005 Nomination need be provided as the original has been retained. Nominations must be received by the CMS Office no later **April 30, 2006**. Please send six copies of each nomination to the address given below.

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

2006

In 1995, the Society established this award to recognize individuals who have made sustained and significant contributions to the Canadian mathematical community and, in particular, to the Canadian Mathematical Society.

Nominations should include a reasonably detailed rationale and be submitted by **March 31, 2006**, to the address below.

En 1995, la Société mathématique du Canada a créé un prix pour récompenser les personnes qui contribuent de façon importante et soutenue à la communauté mathématique canadienne et, notamment, à la SMC.

Pour les mises en candidature prière de présenter des dossiers avec une argumentation convaincante et de les faire parvenir, le **31 mars 2006** 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 2006 Adrien-Pouliot and Distinguished Service Awards will be presented at the CMS Winter 2006 Meeting in Toronto, ON, December 9 to 11.
Les prix pour service méritoire et Adrien-Pouliot seront présentés à la Réunion d'hiver 2006 de la SMC à Toronto (Ontario), du 9 au 11 décembre.

CALL FOR NOMINATIONS / APPEL DE MISES EN CANDIDATURE

**NEW CMS PRIZE
NOUVEAU PRIX
DE LA SMC**

DAVID BORWEIN DISTINGUISHED CAREER AWARD PRIX DAVID-BORWEIN DE MATHÉMATICIEN ÉMÉRITE POUR L'ENSEMBLE D'UNE CARRIÈRE

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

A complete nomination dossier consists of:

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

A nomination can be updated and will remain active for three years. Six copies of the complete nomination dossier must arrive at the CMS Executive Office no later than **March 31, 2006**.

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

Le dossier de candidature comprendra les éléments suivants :

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

Toute mise en candidature est modifiable et demeurera active pendant trois ans. Le dossier complet, en six exemplaires, doit parvenir au bureau administratif de SMC au plus tard le **31 mars 2006**.

Selection Committee / Comité de sélection

David Borwein Distinguished Career Award

Prix David Borwein pour carrière distinguée

Canadian Mathematical Society / Société mathématique du Canada

577 King Edward, Ottawa, Ontario K1N 6N5

Its is hoped to present the first award
at the Summer 2006 meeting in Calgary.

Nous esperons présenter le premier prix
à la réunion d'été 2006 de la SMC à Calgary.



CONTRIBUTIONS TO DISCRETE MATHEMATICS A NEW ACADEMIC E-JOURNAL, FREE FOR ALL <http://cdm.math.ca/>

About the journal

Contributions to Discrete Mathematics is a refereed e-journal dedicated to publishing significant works in a timely manner. Based at the University of Calgary, CDM is free for both authors and readers. We publish research articles in areas such as combinatorics and graph theory, discrete and computational geometry, discrete optimization and operations research, theoretical computer science, and coding and communication theory.

Articles concerning the following topics are especially encouraged:

- Mathematical logic and universal algebra (03B, 03C, 08)
- Applications of logic to algebra and computer science (03B, 03D, 03G)
- Set theory (03E)
- Designs (05B, 51E)
- Sphere packings, coverings and arrangements (05B, 52C)
- Geometric and algebraic combinatorics (05E)
- Partially ordered sets and lattices (06A, 06B)
- Diophantine approximation (11J)
- Cryptography, especially algebraic and number theoretic methods (11T, 14G)
- Computational number theory (11Y)
- Linear and nonlinear equations in matrices and operators (15A, 47A, 47J)
- Discrete geometry including the theory of polytopes and rigidity (32F, 52B, 52C)
- Operator theory with discrete aspects (46N, 47A)
- Combinatorial and finite geometry (51D, 51E)
- Computational geometry including computational convexity (52B, 65D)

Call for papers

We invite authors to submit original, unpublished research for peer review. We also welcome survey articles in the scope of the journal. More information about the submission procedures can be found on our website, at <http://cdm.math.ca>.

Honorary Editor-in-Chief: John H. Conway

Editors-in-Chief: Karoly Bezdek, Norbert Sauer, Hugh Williams

Managing Editor: Michael Lamoureux

CALL FOR NOMINATIONS

CJM/CMB - Associate Editors

The Publications Committee of the CMS solicits nominations for 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, 2007. The continuing members (with their end of term) are below.

The deadline for the submission of nominations is April 15, 2006.

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

Nantel Bergeron (York) 12/2010; Jianhong Wu (York) 12/2010.

APPEL DE MISES EN CANDIDATURE

JCM/BCM - Rédacteurs associés

Le comité des publications de la SMC sollicite des mises en candidatures pour des 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 2007. La liste des éditeurs qui sont en cours de mandat se trouve ci-dessous..

L'échéance pour proposer des candidats est le 15 avril 2006.

Les mises en candidature, accompagnées d'un curriculum vitae ainsi que du consentement du candidat(e), devrait être envoyées à l'adresse ci-dessous.

NSERC - CMS Math in Moscow Scholarships

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

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

Math in Moscow Program

www.mccme.ru/mathinmoscow/

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, 2006** to attend the Fall 2006 semester



Bourse CMS/CRSNG Math à Moscou

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

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

Programme Math à Moscou

www.mccme.ru/mathinmoscow/

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 le **30 mars 2006** pour le trimestre d'automne 2006



EMPLOYMENT OPPORTUNITY - University of Lethbridge - Statistics

The Department of Mathematics and Computer Science at the University of Lethbridge is seeking an Assistant Professor, probationary (tenure-track) to begin 1 July 2006, subject to budgetary approval. The Department will hire a candidate in Statistics or a closely related area.

A Ph.D. at or near completion is required. The successful candidate will be expected to develop a continuing research program, to seek external funding, and to teach at the undergraduate level. New faculty are eligible for funding in support of research and scholarly activities. Our graduate program is expanding and supervision of graduate students is encouraged. The department continues to grow and serves both majors and students in a variety of areas. Good computational resources are available both locally and via the Westgrid initiative.

Located in southern Alberta, near the Rocky Mountains, Lethbridge offers a sunny, dry climate that is surprisingly mild for the prairies, excellent cultural and recreational amenities and attractive economic conditions. Founded in 1967, the University has an enrollment of over 8,000 students. Our focus on liberal education, selected professional programs, smaller classes, co-op placements and involvement of students in faculty research provides the very best education available. For more information about the University please

visit our web site at www.uleth.ca, and the Department's web site at www.cs.uleth.ca.

The position is open to all qualified applicants, although preference will be given to Canadian citizens and permanent residents of Canada. The University is an inclusive and equitable campus encouraging applications from qualified women and men including persons with disabilities, members of visible minorities and Aboriginal persons.

Applications including a curriculum vitae, transcripts, publications, a statement of teaching philosophy and research interests, and names and contact information of at least three references who are scholars in the field, should be sent to: **Dr. Stephen Wismath**, Chair of Search Committee, Department of Mathematics and Computer Science, University of Lethbridge, 4401 University Dr., Lethbridge, Alberta, T1K 3M4. E-mail: chair@cs.uleth.ca; phone: (403) 329-2470.

To expedite the handling of applications, please have references send their supporting letters directly to the above address. The closing date for the competition is **February 28, 2006**.

CALENDAR OF EVENTS / CALENDRIER DES ÉVÉNEMENTS

FEBRUARY	2006	FÉVRIER	MAY	2006	MAI
13-18	L-functions and Related Themes (CRM, Montreal, Quebec) www.crm.umontreal.ca/Number2005/		12-13	Ottawa-Carleton Discrete Mathematics Workshop (Carleton University, Ottawa, ON) www.fields.utoronto.ca/programs/scientific/05-06/discrete_math/	
20-24	p-Adic Representations, Modularity, and beyond AIM Research Conference Center (Palo Alto, CA) www.aimath.org/ARCC/workshops/padicmodularity.html		13-18	Analytical Methods for Diophantine Equations (Banff International Research Station, Banff, AB) paradis@crm.umontreal.ca	
MARCH	2006	MARS	17-21	ASL Annual Meeting (Montreal, Quebec) asl@vassar.edu	
7-11	Holomorphic Dynamics, in Celebration of John Milnor's 75th Birthday (Fields Institute, Toronto) www.fields.utoronto.ca/programs/scientific/05-06/			Coxeter Lecture Series: Yair Minsky (Yale) (Fields Institute, Toronto) www.fields.utoronto.ca/programs/scientific/05-06/date_to_be_determined/ / date à déterminer	
13-17	Anatomy of Integers (CRM, Montreal, Quebec) www.crm.umontreal.ca/Number2005/		23-27	Hyperbolic Geometry (Fields Institute, Toronto) www.fields.utoronto.ca/programs/scientific/05-06/	
13-17	International Congress on the Applications of Mathematics (in co-operation with SIAM) (Santiago, Chile) www.siam.org/meetings/calendar.php		JUNE	2006	JUIN
29	Canadian Mathematical Olympiad Olympiade mathématique du Canada www.cms.math.ca/Competitions www.smc.math.ca/Concours		3-5	CMS Summer 2006 Meeting / Réunion d'été 2006 de la SMC Westin Hotel, Calgary AB www.cms.math.ca/events_meetings@cms.math.ca	
APRIL	2006	AVRIL	3-7	Rencontre annuelle 2006 du GCEDM/ CMESG 2006 Annual Meeting (University of Calgary, Calgary, AB)	
3-7	Workshop on Number Theory and Polynomials, Heilbronn Institute for Mathematical Research (University of Bristol, UK) www.maths.bris.ac.uk/heilbronn/heilbronn.html		25-28	2006 SIAM Conference on Discrete Mathematics (Victoria, B.C.) www.siam.org/meetings/calendar.php	
6-12	Additive Combinatorics (CRM, Montreal, Quebec) www.crm.montreal.ca/Number_2005/		27-Jul 3	International Commission on Mathematical Instruction: Challenging Mathematics in and beyond the Classroom (Trondheim, Norway) www.amt.canberra.edu/icmisi6.html/ , barbeau@math.utoronto.ca	
MAY	2006	MAI	JULY	2006	JUILLET
5-10	Combinatorial and Geometric Group Theory (Vanderbilt University, Nashville, TN) www.math.vanderbilt.edu/~msapir/cggt/cggt.html		10-14	SIAM Annual Meeting (Boston, MA) www.siam.org/meetings/calendar.php	

CALENDAR OF EVENTS / CALENDRIER DES ÉVÉNEMENTS

JULY	2006	JUILLET	SEPTEMBER	2006	SEPTEMBER
6-18	International Mathematical Olympiad / Olympiade Internationale mathématique (Ljubljana, Slovenia) www.cms.math.ca/Competitions www.smc.math.ca/Concours		14-17	Conference On Routing And Location 2006 (CORAL 2006), Satellite to ICM 2006 (Puerto de la Cruz, Tenerife) www.icm2006.org	
AUGUST	2006	AOÛT	OCTOBER	2006	OCTOBRE
2-6	Eighth IMS North American New Researchers Conference (Minneapolis, Minnesota) galin@stat.umn.edu		2-6	Quantum Cryptography And Computing Workshop (The Fields Institute, Toronto) www.fields.utoronto.ca/programs/scientific/06-07/crypto/quantum	
12-20	Methods of Integrable Systems in Geometry: An LMS Durham Research Symposium, Satellite to ICM 2006 (University of Durham, UK) www.icm2006.org		30-Nov.3	Computational challenges arising in algorithmic number theory and cryptography (the Fields Institute, Toronto) www.fields.utoronto.ca/programs/scientific/06-07/crypto/number_theory/	
13-19	10th Prague Topological Symposium, International Conference on General Topology and its Relations to Modern Analysis and Algebra (Prague, Czech Republic) topology-news@atlas-conferences.com		NOVEMBER	2006	NOVEMBRE
16-19	Trends and Challenges in Calculus of Variations and its Applications, Satellite to ICM 2006 (UCLM, Toledo, Spain) www.icm2006.org		27-Dec.1	Workshop on Cryptography: Underlying Mathematics, Provability and Foundations (the Fields Institute, Toronto) www.fields.utoronto.ca/programs/scientific/06-07/crypto/crypto_foundations/	
16-19	Algebraic Geometry, Satellite to ICM 2006 (Segovia, Spain) www.icm2006.org		DECEMBER	2006	DÉCEMBRE
22-30	International Congress of Mathematicians (Madrid, Spain) www.icm2006.org		9-11	CMS Winter 2006 Meeting / Réunion d'hiver 2006 de la SMC Toronto, ON www.cms.math.ca/events , meetings@cms.math.ca	

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