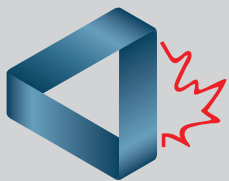


Indigenization and Reconciliation through University Mathematics.....9

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CMS
SMC

CMS NOTES de la SMC

March-April/
mars-avril
2019

Dr. Graham P. Wright

CMS Executive Secretary / Secrétaire exécutif de la SMC (2015-2018)

Retirement Round 2!



When I retired as CMS Executive Director in 2009, little did I anticipate that I would be back in the fall of 2015 and involved again with CMS affairs.

The CMS was facing a number of challenges particularly regarding the Society's finances and administration. A review of the CMS Executive Office was undertaken and I wish to thank Lia Bronsard, Michael Bennett, Rengarajan Srinivasan, David Rodgers and the CMS Staff for their considerable efforts with this review. Automating a number of office functions was identified as a priority. Following a review of a Request for Proposals, a contract was signed with CRM – Sage Systems. Members can now renew, donate, and register for CMS meetings using their member portal and all payments are processed automatically. The CRM System is used to track donations from sponsors and members and other office functions are now derived from this system,

The Executive Office Review also identified that significant work was needed to identify corporations, foundations and others who might support any of the Society's activities. Many thanks go to Gerri Jensen for getting the CMS fund raising efforts back on track. Also, considerable thanks are due to David Oakden, CMS Treasurer, for his efforts in securing significant support from the actuarial profession for the Canadian Open Mathematics Challenge and CMS Math Camps and from the Intact Insurance Foundation whose support will make it possible to provide *Crux Mathematicorum* as

Retraite : prise 2!

Lorsque j'ai pris ma retraite de mon poste de directeur administratif de la SMC en 2009, j'étais loin de me douter que je serais de retour à l'automne 2015 pour participer de nouveau aux activités de la Société.

La SMC était alors aux prises avec un certain nombre d'enjeux, surtout financiers et administratifs. Un examen du fonctionnement du bureau administratif était en cours. À ce titre, je tiens à remercier Lia Bronsard, Michael Bennett, Rengarajan Srinivasan, David Rodgers et le personnel de la SMC pour les efforts considérables déployés dans le cadre de cet exercice, qui a permis de mettre une priorité en lumière : la nécessité d'automatiser des tâches de bureau. Après analyse d'une demande de propositions, la SMC a signé un contrat avec Sage CRM. Résultat : les membres peuvent désormais renouveler leur adhésion, faire un don ou s'inscrire aux Réunions de la SMC sur le portail qui leur est réservé. Tous les paiements sont traités automatiquement. Le système CRM assure le suivi des dons des commanditaires et des membres. Il permettra sous peu d'effectuer d'autres tâches.

Cet examen du fonctionnement du bureau administratif a fait apparaître un élément supplémentaire : l'ampleur du travail nécessaire pour identifier les personnes morales, les fondations et les divers intervenants susceptibles de soutenir les activités de la SMC. Un énorme merci donc à Gerri Jensen qui a donné un nouveau souffle aux campagnes de financement. Immense merci également à David Oakden, le trésorier de la SMC qui a réussi à obtenir un appui substantiel des actuaires pour le Défi ouvert canadien de mathématiques et les camps

Academic Spam Revisited



Some years ago (Oct/Nov 2013) I wrote an editorial about academic spam: invitations to attend dubious conferences, or to publish in suspect journals or join their editorial boards. I was prompted to do this by the observation that some of these were actually tailored to the recipient, citing a specific article (supposedly highly regarded in the mathematical community)

as the reason for the invitation. Unfortunately, the sender rather sabotaged their own efforts by the article of mine that they chose - which was a poem that had been published in the *Journal of Humanistic Mathematics* - (BZZ! Thank you for playing.)

Oddly, this apparently unconvincing scam has some staying power. Half a decade later, I'm still getting the same sort of invitations. These days, the ground-breaking article that gets me invited to join august editorial boards most frequently is a one-frame cartoon that I published in the *Mathematical Intelligencer*. (Never a research article, never a book review, nor even an editorial. Should I be insulted?)

One possibility that I've heard voiced is that the advertisement contains its own reverse-scored intelligence test, and they only want to find the most gullible victims. There are other online scams that one might suspect of this. (In particular, why do so many scammers insist on sending me three copies of their bait under different names?)

Another possibility is that the people running these rackets don't want to fool anybody - they are looking for willing participants, prepared to lend their names to a bogus journal and/or pay page charges to fool potential employers. This makes a certain amount of sense. Why waste resources recruiting somebody who will soon see through you and maybe even cause trouble, when you can get a partner in crime? If your research confidence tricks, probably eighty percent of them are based on appeals to the victim's own greed and dishonesty. Needless to say, the victim loses in the end.

But don't make assumptions - one *can* cheat an honest person, and there are plenty of scams out there designed to do so. Many CMS members, myself included, recently saw one of these in the form of an email purporting to come from a traveling colleague in temporary financial difficulty. It's still a jungle out there. I can only appeal to *CMS Notes* readers to keep an eye open and not be the prey. Nor--it goes without saying-- the predator!

Les pourriels à l'université : prise 2

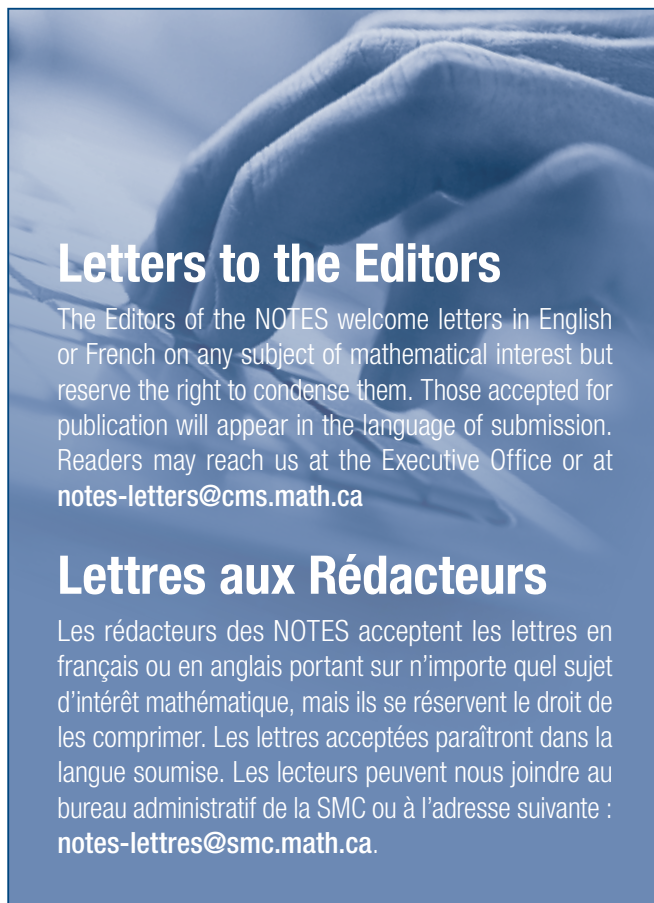
Il y a quelques années, en octobre-novembre 2013, j'ai écrit un éditorial sur les pourriels à l'université, ces invitations à prendre part à des conférences douteuses, à publier dans des revues suspectes ou encore à participer à leurs comités de rédaction. J'avais en effet constaté que certains de ces messages étaient composés sur mesure et adaptés à leurs destinataires. On y mentionnait même un article précis de l'auteur, très respecté, semble-t-il, dans le milieu des mathématiques, pour justifier l'invitation. Malheureusement, dans mon cas, l'expéditeur s'est bel et bien tiré dans le pied en citant un des poèmes que j'avais fait paraître dans le *Journal of Humanistic Mathematics*. (Désolé, c'est raté!)

Curieusement, on dirait bien que ces pourriels en apparence peu convaincants sont toujours d'actualité. Cinq ans plus tard, je continue d'en recevoir. Ces jours-ci, le formidable article qui me vaut l'honneur d'être invité à me joindre à ces augustes comités de rédaction est, le plus souvent, un dessin humoristique que j'ai publié dans *Mathematical Intelligencer*. (Il ne s'agit jamais d'un article de recherche, d'une critique de livre ou d'un éditorial. Devrais-je m'en offusquer?)

J'ai entendu dire, à titre explicatif, que l'annonce contient son propre test d'intelligence à score inversé. L'objectif? Harponner les victimes les plus crédules. Différentes escroqueries en ligne visent probablement la même fin. (D'ailleurs, je me demande bien pourquoi un si grand nombre de fraudeurs persistent, signent et m'envoient leur appât décliné en trois versions sous des noms différents.)

Autre possibilité : les auteurs de ces rackets ne tiennent pas vraiment à tromper qui que ce soit. Ils cherchent plutôt des participants consentants, prêts à se commettre dans une revue bidon et à payer des frais de publication pour leurrer d'éventuels employeurs. Convenons-en, il y a une certaine logique à cela. Pourquoi en effet gaspiller des ressources pour recruter quelqu'un qui verra vite clair dans votre jeu et vous causera peut-être même des problèmes alors que vous pouvez trouver un complice dans le crime? Si l'on se penche sur les escroqueries, on constate que probablement 80 p. 100 d'entre elles en appellent à l'avidité et à la malhonnêteté des victimes. N'oublions pas une chose, toutefois : c'est la victime qui est perdante.

Néanmoins, gardons-nous des hypothèses fallacieuses : on *peut* aussi bernier une personne honnête. Dans ce registre, les combines ne manquent pas. Bon nombre des membres de la SMC, y compris moi-même, en ont récemment vu passer une sous forme de courriel soi-disant envoyé par un collègue en voyage qui se trouvait dans une situation financière temporairement difficile. Bref, rien n'a changé, c'est toujours la jungle. Je ne peux que faire appel aux lectrices et aux lecteurs des *Notes de la SMC* : ouvrez l'œil! Ne vous laissez pas abuser, ne vous transformez pas en proie. Ne jouez pas non plus au prédateur, cela va sans dire.



Letters to the Editors

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

Lettres aux Rédacteurs

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

NOTES DE LA SMC

Les Notes de la SMC sont publiés par la Société mathématique du Canada (SMC) six fois par année (février, mars/avril, juin, septembre, octobre/novembre et décembre).

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Les rédacteurs des Notes de la SMC accueillent vos articles, lettres et notes. Indiquer la section choisie pour votre article et le faire parvenir à l'adresse courriel appropriée ci-dessus.

Les Notes de la SMC, les rédacteurs et la SMC ne peuvent pas être tenus responsables des opinions exprimées par les auteurs.

CMS NOTES

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

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The editors welcome articles, letters and announcements. Indicate the section chosen for your article, and send it to CMS Notes at the appropriate email address indicated above.

No responsibility for the views expressed by authors is assumed by the CMS Notes, the editors or the CMS.

2019 CMS MEMBERSHIP RENEWALS RENOUVELLEMENTS 2019 À LA SMC



The 2019 membership renewals have been sent! Please renew your membership online by March 31, 2019 at portal.cms.math.ca by logging into your member account. Should you have any questions, please email us at memberships@cms.math.ca

Le renouvellement pour l'an 2019 a été envoyé! S'il vous plaît renouveler votre adhésion en ligne avant le 31 mars, 2019 à portail.smc.math.ca et en vous connectant à votre compte de membre. Si vous avez des questions, s'il vous plaît écrivez-nous à adhesions@smc.math.ca

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La Société mathématique du Canada appuie l'avancement, la découverte, l'apprentissage et l'application des mathématiques. L'exécutif de la SMC encourage les questions, commentaires et suggestions des membres de la SMC et de la communauté.

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The CMS promotes the advancement, discovery, learning and application of mathematics. The CMS Executive welcomes queries, comments and suggestions from CMS members and the community.

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Continued from cover

a freely available on-line publication in 2019. The CMS financial situation looks much more solid thanks to these and other significant donations, increased revenues from the Canadian Open Mathematics Challenge for example and cost reductions in some areas.

In addition to a review of the CMS Executive Office, a review was also undertaken related to status and work required for the production, distribution and subscription management for the *Canadian Journal of Mathematics* (CJM) and the *Canadian Mathematical Bulletin* (CMB).

For many years, the CMS Production Office in Winnipeg has handled the excellent preparation of CJM and CMB articles with Craig Platt as the Technical Editor, Michael Doob as Technical Consultant, Srinivasa Swaminathan (Dalhousie) as the Associate Technical Editor and with editorial assistance from Lee-Ann Baldwin and Penny Gilbert. Also, the University of Toronto Press has been a long-time partner with the CMS for the subscription management and distribution of the CJM and CMB.

Since the major component in the CMS finances is the subscription revenue from the CJM and CMB, any changes had to be very carefully considered. A Request for Proposals was prepared and, after a thorough review and further consultations with those submitting responses, the CMS decided to establish a contract with Cambridge University Press. Maintaining the production quality of the CJM and CMB as well as the marketing expertise of Cambridge were two of the factors in this decision. Recently, CMS members were advised that on-line access for the CJM and CMB through Cambridge Core is now one of the benefits of membership.

The CMS is indebted to Karl Dilcher, Rahim Moosa, Javad Mashreghi, Craig Platt, Michael Doob, the CJM and CMB Editors-in-Chief and, once again, David Rodgers for all their efforts with this review.

As the CMS Executive Director from 1979 to 2009 it was never a dull time and the same can be said for my second stint, as the part-time Executive Secretary. In addition to the changes mentioned above the CMS has established a Fellows Program with

the 49 Inaugural Fellows introduced at the CMS Winter Meeting in Vancouver. I was very honoured to be included in the class of Inaugural Fellows. To provide better links between the CMS and local departments, several members have agreed to be included in the CMS Ambassadors program. These “ambassadors” are also helping to encourage colleagues, particularly new faculty members, to join the CMS and become involved in the Canadian mathematical community. If you are interested in helping the CMS in this way please contact: Denise Charron at mpagent@cms.math.ca

In 2018, more than 8,000 high school students, a record number, registered to write the Canadian Open Mathematics Challenge (COMC). Through a new agreement with ASDAN, more than 900 students from Mainland China registered to compete in 2018 COMC. For the first time, and with major support from the Faculty of Mathematics (University of Waterloo) and other sponsors, the CMS was able to select, train and send a team to compete at the European Girls Mathematics Olympiad (EGMO) in Italy in April 2018. I am delighted to report that the Faculty of Mathematics (University of Waterloo) has agreed to continue to support the Canadian EGMO team for the next three years.

The Society was very fortunate to have the services of Steve LaRoque for nine years and, although Steve LaRoque is no longer a permanent member of the CMS staff, he continues to provide assistance on a contract basis – many thanks Steve.

I tried to retire in 2009! In 2019, I think, I may get to hit that white ball around the links more often and also watch the Senators win! (yes - sometimes!). The major factor in making this possible is the appointment of Dr. Termeh Kousha as the full-time CMS Executive Director. A big thank you to Mark Lewis, Michael Bennett and Lia Bronsard for their guidance and help in the search for a new full-time Executive Director.

Thanks to all those members and colleagues who helped me through my “return engagement”. Thanks also to current and past members of the CMS Executive and Board of Directors and particularly to Termeh Kousha, Yvette Roberts, Alan Kelm, Denise Charron, Sarah Watson, Patricia Dack and Gosia Skrobotan.

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Suite de la couverture

mathématiques, d'une part, et de la Fondation Intact, d'autre part. Grâce au soutien de la Fondation, nous pourrions proposer *Crux Mathematicorum* en accès libre et gratuit, en ligne, en 2019. La SMC se porte beaucoup mieux financièrement à la faveur, entre autres, de ces dons importants, de l'augmentation des revenus tirés du Défi ouvert canadien de mathématiques et de la réduction des coûts dans certains domaines.

La gestion de la publication, de la diffusion et des abonnements ainsi que le travail nécessaire à ces tâches, qu'il s'agisse du *Journal canadien de mathématiques* (JCM) ou du *Bulletin canadien de mathématiques* (BCM), ont également été passés au peigne fin.

Depuis de nombreuses années, le Bureau des publications de Winnipeg prépare avec brio les articles du JCM et du BCM, grâce à Craig Platt, rédacteur technique, Michael Doob, consultant technique, Srinivasa Swaminathan (Dalhousie), rédacteur technique adjoint ainsi que Lee-Ann Baldwin, adjointe administrative et Penny Gilbert, adjointe technique. Soulignons aussi que les Presses de l'Université de Toronto collaborent de longue date avec la SMC pour la gestion des abonnements et la diffusion du JCM et du BCM.

Puisque les revenus tirés des abonnements constituent l'assise financière du JCM et du BCM, d'éventuels changements doivent être minutieusement étudiés. Une demande de propositions a été préparée. Après une analyse approfondie et de nombreuses consultations avec les auteures et auteurs de ces propositions, la SMC a signé une entente contractuelle avec les Presses de l'Université de Cambridge. Le maintien de la qualité de la production du JCM et du BCM ainsi que l'expertise en marketing des Presses de l'Université de Cambridge sont deux des facteurs qui ont pesé dans la décision. Les membres de la SMC ont appris récemment que l'accès en ligne au JCM et au BCM, par l'entremise de Cambridge Core, est désormais l'un des avantages auquel donne droit le statut de membre.

La SMC doit beaucoup à Karl Dilcher, Rahim Moosa, Javad Mashreghi, Craig Platt, Michael Doob, les rédacteurs en chef du JCM et du BCM, et à David Rodgers, une fois encore, pour tous les efforts consentis lors de cet examen.

Je ne me suis jamais ennuyé à la SMC, que ce soit comme directeur administratif de 1979 à 2009 ou lors de mon deuxième mandat, comme secrétaire exécutif à temps partiel. Outre les changements mentionnés plus haut, la SMC a créé un Programme

des *fellows*. Les 49 membres initiaux ont été présentés à la Réunion d'hiver, à Vancouver. Ce fut pour moi un grand honneur d'avoir été admis dans la cohorte inaugurale de fellows. Pour renforcer les liens entre la SMC et les départements locaux, plusieurs membres ont convenu de participer au Programme des ambassadeurs de la SMC. Ces « ambassadeurs » encouragent leurs collègues, notamment les nouvelles recrues des facultés, à se joindre à la SMC et à s'impliquer dans le milieu canadien des mathématiques. Vous aussi, vous souhaitez aider la SMC de cette façon? N'hésitez pas! Communiquez avec Denise Charron à l'adresse suivante : mpagent@smc.math.ca

En 2018, plus de 8 000 élèves du secondaire, un record, se sont inscrits au Défi ouvert canadien de mathématiques. Dans le cadre d'une nouvelle entente avec ASDAN, plus de 900 élèves de la Chine continentale se sont inscrits à l'opus 2018 du Défi. Pour la première fois, et grâce à l'important soutien de la Faculté de mathématiques de l'Université de Waterloo, entre autres commanditaires, la SMC a réussi à sélectionner, former et envoyer une équipe aux Olympiades européennes de mathématiques pour filles (OEMF), en Italie, en avril 2018. J'ai le plaisir de vous informer que la Faculté de mathématiques de l'Université de Waterloo s'est engagée à poursuivre cette collaboration et à commanditer l'équipe qui représentera le Canada aux OEMF au cours des trois prochaines années.

Pendant neuf ans, la SMC a eu la chance de pouvoir compter sur les services de Steve LaRoque. Même si celui-ci n'est plus membre permanent du personnel, il continue de fournir l'aide nécessaire sur une base contractuelle. Steve, mille fois merci!

J'ai essayé de prendre ma retraite en 2009. En 2019, j'espère pouvoir jouer au golf plus souvent et regarder les Sénateurs gagner (oui, parfois!). La nomination de Termeh Kousha comme nouvelle directrice administrative à temps plein de la SMC rend tout cela possible. Un énorme merci à Mark Lewis, Michael Bennett et Lia Bronsard pour vos avis et votre soutien. Grâce à vous, nous avons trouvé cette perle rare.

Merci à tous les membres de la SMC et à tous les collègues qui m'ont aidé lors de mon « retour ». Merci aussi à tous les membres, passés et actuels du bureau administratif et du conseil d'administration, particulièrement Termeh Kousha, Yvette Roberts, Alan Kelm, Denise Charron, Sarah Watson, Patricia Dack et Gosia Skrobotan.

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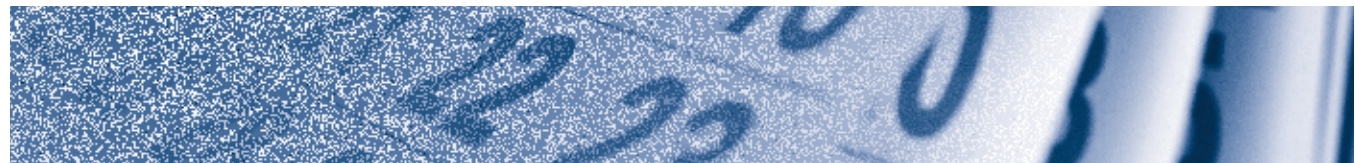


The Calendar brings current and upcoming domestic and select international mathematical sciences and education events to the attention of the CMS readership. Comments, suggestions, and submissions are welcome.

Patricia Dack, Canadian Mathematical Society,
(pdack@cms.math.ca)

Le calendrier annonce aux lecteurs de la SMC les activités en cours et à venir, sur la scène pancanadienne et internationale, dans les domaines des mathématiques et de l'enseignement des mathématiques. Vos commentaires, suggestions et propositions sont le bienvenue.

Patricia Dack, Société mathématique du Canada
(pdack@smc.math.ca)



MARCH 2019 MARS

- 3-8 BIRS Workshop: [Phase-Field Models of Fracture](#), BIRS, Banff, AB.
- 4-5 PIMS Mini-course on [High-Dimensional Data in Uncertainty Quantification of PDEs](#), Simon Fraser University, Burnaby, BC.
- 4-8 CRM Workshop: [Free Probability: the theory, its extensions](#), CRM, Université de Montréal, Montreal, QC.
- 10-15 BIRS Workshop: [Asymptotic Algebraic Combinatorics](#), BIRS, Banff, AB.
- 14 Grande conférence de [Mark Lewis](#), CRM, Montréal, QC.
- 17-22 BIRS Workshop: [Mathematical Criminology and Security](#), BIRS, Banff, AB.
- 22-24 [Montreal-Toronto Workshop in Number Theory: Period Maps](#), CRM, Université de Montréal, QC.
- 24-29 BIRS Workshop: [The Topology of Nucleic Acids: Research at the Interface of Low-Dimensional Topology, Polymer Physics and Molecular Biology](#), BIRS, Banff, AB.
- 25-29 CRM Workshop: [Free Probability: the applied perspective](#), CRM, Université de Montréal, Montreal, QC.

APRIL 2019 AVRIL

- 1-2 Tutorial: [A Computer-Assisted Constructive Approach to Nonlinear Dynamical Systems](#), CRM, Montreal, QC.
- 3-6 Workshop: [Rigorous Computational Dynamics in Infinite Dimensions](#), CRM, Montreal, QC.
- 5-7 [Flows on the Saskatchewan: a workshop on integrability and inverse problems](#), University of Saskatchewan, Saskatoon, SK.
- 13-14 Tutorial: [A Topological-Combinatorial Framework for Dynamics](#), CRM, Montreal, QC.
- 15-18 Workshop: [Data Driven Dynamics: Algebraic Topology, Combinatorics and Analysis](#), CRM, Montreal, QC.
- 24-26 [International Arab Conference on Mathematics and Computation \(IACMC 2019\)](#) Zarqa University, Zarqa, Jordan
- 26 2019 Math Horizons Day, University of Ottawa/Université d'Ottawa, Ottawa, ON.
- 27-31 BIRS Workshop: [Optimal Transport Methods in Density Functional Theory](#), BIRS, Banff, AB.
- 29 [Integration Challenge at StFX](#), St. Francis Xavier University, Antigonish, NS.

MAY 2019 MAI

- A29-M17 [Faces of Integrability](#), CRM, Montreal, QC.
- 3-5 [First-Year Maths and Stats in Canada](#) University of Alberta, Edmonton, AB.
- 6-10 Workshop on [Geometrization of the Local Langlands Program](#), McGill University, Montreal, QC.
- 13-15 [R à Québec 2019](#), Université Laval, Québec, QC.
- 22-24 [Atlantic Causal Inference Conference 2019](#), McGill University, Montreal, QC.
- 27-31 BIRS Workshop: [Optimal Transport Methods in Density Functional Theory](#), BIRS, Banff, AB.
- 28-31 [CanaDAM 2019 : 7th Canadian Discrete and Algorithmic Mathematics Conference](#), Simon Fraser University – SFU Harbour Centre, Vancouver, BC.

JUNE 2019 JUIN

- 2-4 The 2019 [CSHPM/SCHPM Annual Meeting](#) - Congress of the Humanities and Social Sciences, University of British Columbia, Vancouver, BC.
- 3-7 [14th International Conference on Finite Fields and their Applications \(Fq14\)](#) at Simon Fraser University, Vancouver, Canada.
- 7-10 2019 [CMS Summer Meeting / Réunion d'été de la SMC 2019](#), University of Regina, Saskatchewan / Université de Regina, Regina, SK.
- 10-14 [A Celebration of Geometry, Analysis and Physics](#). Conference honouring Niky Kamran on his 60th birthday, CRM, Montreal, QC.
- 18-21 [Mathematics and its Connections to the Arts and Sciences](#), McGill University, Montreal, QC

JULY 2019 JUILLET

- 1-5 [11th International Symposium: Quantum Theory and Symmetries \(QTS\)](#), Centre de recherches mathématiques, Montreal, QC
- 21-26 [Society for Mathematical Biology Annual Meeting](#), Centre de recherches mathématiques, Montreal, QC
- 24-28 [Canadian Undergraduate Mathematics Conference](#), Queen's University, Kingston, ON
- 31-A3 [MAA Math Fest](#), Cincinnati, OH

Book Reviews brings interesting mathematical sciences and education publications drawn from across the entire spectrum of mathematics to the attention of the CMS readership. Comments, suggestions, and submissions are welcome.

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Office Hours with a Geometric Group Theorist

Edited by Matt Clay & Dan Margalit

Princeton University Press, 2017

ISBN: 978-0-691-15866-2

Reviewed by *Dale Rolfsen*, UBC Vancouver



Geometric group theory is the study of groups using geometric and topological techniques. Groups themselves can be regarded as geometric objects, and properties of abstract groups can be fruitfully studied by considering spaces upon which they act. Some techniques of geometric group theory are well over a century old, but the field has recently

become extremely active following seminal work by Gromov, Stallings and others.

The book under review is a wonderful introduction to the subject, suitable to a serious undergraduate or graduate student as well as a reference for more experienced mathematicians (or non-mathematicians). It has an unusual, and I think very effective, format as a series of “office hours” in each of which a given concept is explained in a manner that one might talk with an eager student during office hours. There are seventeen authors, including the two editors, and they were instructed to write a chapter (office hour) with the task of answering an undergraduate who asked one of the following questions: “Will you tell me about your research?” “Will you help me find a topic for a senior project?” The experience is enhanced by photos of the authors, many exercises, suggestions for further reading and a list of projects at the end of each office hour. There is a strong emphasis on examples and informal discussion of techniques and ideas.

Except for two introductory chapters, the various office hours are independent of one another. The scope of the book can be understood from the titles of the office hours: Groups, Spaces, Groups acting on trees, Free groups and folding, Ping-pong lemma, Automorphisms of free groups, Quasi-isometries, Dehn functions, Hyperbolic groups, Ends of groups, Asymptotic dimension, Growth of groups, Coxeter groups, Right-angled Artin groups (RAAGs), Lamplighter groups, Thompson’s group, Mapping class groups, Braids.

Despite the informality, there are also rigorous arguments offered for many nontrivial facts, such as residual finiteness of free groups,

Les comptes-rendus de livres présentent aux lecteurs de la SMC des ouvrages intéressants sur les mathématiques et l’enseignement des mathématiques dans un large éventail de domaines et sous-domaines. Vos commentaires, suggestions et propositions sont les bienvenus.

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solution of the word problem in RAAGs, braid groups and hyperbolic groups, the Milnor-Schwartz lemma (a.k.a. fundamental lemma of geometric group theory) and the striking fact that Thompson’s (finitely presentable) group V contains copies of all finite groups.

This book is accessible to any person who has a basic background in abstract algebra. It makes lively reading, enhanced by many beautiful illustrations. (Who would think an algebra book would have such?) The fact that there are so many authors gives the book a nice variety of styles and viewpoints.

Highly recommended.

Banach Spaces of Continuous Functions as Dual Spaces

by H. G. Dales, F. K. Dashiell, Jr., A. T.-M. Lau, and D. Strauss

CMS Books in Mathematics, Springer, 2016

ISBN: 978-3-319-32349-7

Reviewed by *David P. Blecher*, University of Houston



This book consists of a lovely exposition and collection of certain aspects of the Banach space of continuous scalar functions on a compact or locally compact space K , turning at the end to some new research related to the duality of such Banach spaces. A general theme is the relationship between the Banach space or algebraic properties of the latter Banach space, and the topology of K . Important influences on the topics represented here include Grothendieck, Dixmier, Stone, Gelfand, and Pelczynski. The authors are excellent writers, and have many previous collaborations together, some on related topics.

The book has six chapters. The first five of these are material on the Stone-Ćech compactification, Banach lattices, Banach spaces and algebras, C^* -algebras, Stonean and hyper-Stonean spaces, and the measure theory needed for some of these topics. One may view these chapters as being, in some sense, background. Treatment of most of these topics may be found scattered elsewhere, for example in some of the C^* -algebra texts like [5, 3], or in Fremlin’s huge multi-volume measure theory treatise, but some of these are difficult to read. It is great to have all of these topics collected so nicely in one place, in a more modern exposition. Some proofs are omitted, but this is reasonable. The authors write with authority from their extensive experience and culture. One also benefits greatly from their ‘position’ in the field: they are very well connected

mathematicians, and this contributes to the very tasty presentation of these topics here. For example the book profits from personal discussions with many mathematicians, and was at least partly inspired by their relationship with W. Bade, who was an early aficionado and expositor (partly in unpublished lecture notes) of the themes represented here.

The final Chapter 6, sixty some pages, is perhaps the *raison d'être* for the book. This chapter is divided between additional background (such as injectivity of $C(K)$), and new research. This research is mostly connected to the interesting and still open problem of when $C(K)$ (or, one could ask more generally, a C^* -algebra) is isometrically a second dual space. It is known when $C(K)$ (or more generally a C^* -algebra) is isometrically a first or third dual space (Sakai's theorem [5, Theorem III.3.5] and [4]). We remark that there is also a series of older works by Samuel Kaplan on the bidual of $C(K)$, but these take largely a different direction. The authors also present some results on when $C_0(K)$ is isomorphically a first dual space.

To illustrate the main question, the reviewer points out that Cho-Ho Chu [1] showed in 1991 (using the Radon-Nikodym property) that a sigma-finite von Neumann algebra M is a second dual space if and only if it is an atomic von Neumann algebra, that is, a direct sum with all summands of form $B(H)$. In the case $M = C(K)$ this result was due to Pelczynski, and is a special case of Theorem 6.10.8 of the book under review. In the general case their question is equivalent to (essentially via Sakai's theorem) a characterization of when L^1 has a predual. This of course is related to the deep and extensive literature of L^1 preduals, which this text does not go deeply into. The main conjecture is that this happens if and only if the L^1 has a predual that is a $C(K)$ space (and one may ask an analogous question for C^* -algebras). That is, $C(K)$ is isometrically a second dual space if and only if K is the 'hyper-Stonean envelope' $\tilde{\Omega}$ of another compact space Ω . By definition, $C(\Omega)^{**} = C(\tilde{\Omega})$. This hyper-Stonean envelope is studied here (see also e.g. [2]), and this investigation was perhaps the instigation for the present book.

The authors check their conjecture mentioned in the last paragraph, for example when the 'second predual' is separable, and obtain a satisfying characterization (the aforementioned Theorem 6.10.8) in this separable case. We remark that a general consensus on somewhat similar problems is that the nonseparable case is often pathological. One might wonder if there are set theoretic/logic issues or obstacles here. It might be interesting to explore possible connections to the continuum hypothesis, somewhat in the spirit of the Banach measure problem, etc. Note that if $C(K)$ is a bidual then it is a direct sum with each summand being L^∞ of a probability space. Unfortunately these summands need not be bidual spaces; otherwise the game would be over immediately. Banach space duality is sometimes a very ugly business. It would also perhaps be interesting to see in the future exploration of related problems for uniform algebras. For example I believe that it is not known, even in the 'separable case', when a uniform algebra might

be a dual space. In particular, if it is, then is it (weak* isometrically isomorphic to) a weak* closed subalgebra of some L^∞ ?

The final chapter also contains several interesting examples. The book closes with a summary of their findings in this chapter, and some open questions. The topics in this final chapter are connected to research over a period of approximately 90 years by many very significant authors, most of whom are no longer with us. This makes it very difficult to collect all knowledge in one place, and this is a relatively short book (around 280 pages) given the depth of the area. There are bound to be some omissions. Perhaps for some readers it would be nice to have included for example Shtern's theorem mentioned above, more on L^1 -preduals, perhaps a modern treatment of Segal's generalization of Maharam's theorem, etc. These authors have however done a great job, and one is left with a sense of deep gratitude for their faithful efforts. No doubt the writing of this book was a labour of love.

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Education Notes brings mathematical and educational ideas forth to the CMS readership in a manner that promotes discussion of relevant topics including research, activities, and noteworthy news items. Comments, suggestions, and submissions are welcome.

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Indigenization and Reconciliation through University Mathematics: Why, When and How?

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The 2018 Canadian Math Society Winter Meeting hosted an education session entitled “Indigenization and Reconciliation through University Mathematics: Why, When and How?” The session organizers were the authors of this note.

We proposed a session on the topic of Indigenization and Reconciliation to the Scientific Committee of the meeting for the following reasons:

- To start a discussion among the members of the Canadian mathematics community about some of the issues emerging from the final report by the Truth and Reconciliation Commission of Canada.
- To demonstrate that the Canadian mathematics community is engaged, in different manners and with various degrees of success, in creating a learning environment where Indigenous students at all levels of education can be able to fully explore and develop their talents for mathematics.
- To create an opportunity for Indigenous voices to be heard at a major Canadian Mathematical Society event.

Over the course of two days, December 8 and 9, fourteen speakers presented thirteen 30-minute-long presentations. We are very proud of the fact that the session hosted seven Indigenous speakers, including two co-organizers of the session, all of whom are involved in mathematical education at the post-secondary level.

We are aware that our session was only a small step towards building a relationship of mutual understanding and trust between the Canadian mathematics community and the Indigenous

Les Notes pédagogiques présentent des sujets mathématiques et des articles sur l'éducation aux lecteurs de la SMC dans un format qui favorise les discussions sur différents thèmes, dont la recherche, les activités et les nouvelles d'intérêt. Vos commentaires, suggestions et propositions sont les bienvenus.

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community, but we were excited to structure an opportunity to share and learn from each other. As clearly demonstrated during our session, the intersection of these two sets of individuals is non-empty, which gives us hope that connections between the two communities will, in the near future, become stronger for the benefit of Canadian society.

We conclude this brief introduction with the words of Dr. Henry Fowler, Professor at Navajo Technical University and a member of the Navajo Nation. His powerful keynote presentation entitled “Naayee – The Warrior that Overshadows Poverty” gave perspective to the challenges and benefits of Indigenizing mathematics at all levels:

“The Navajo Math Circles initiative is directly looking at the eye of the Monster and transforming math education for teachers and students to find joy in learning mathematics. The Navajo Math Circles is the Warrior Naayee, combating poverty in the Navajo Nation through mathematics.”

Public universities across Canada are committed to working to address the calls to action included in the final report by the Truth and Reconciliation Commission (TRC) of Canada. There is a general expectation that departments of mathematics across the country will contribute to this process. The purpose of the “Indigenization and Reconciliation through University Mathematics: Why, When and How?” session was to give an opportunity to participants to collectively search for the answers to the questions:

- 1) Why, when, and how can the mathematical community contribute to the process of reconciliation inside and outside of our college and university math classrooms?



Tla'amin basket
Photo credit: Alex Sutcliffe

2) How can the Canadian mathematical community come together to reduce the drastic educational achievement gap between Indigenous and non-Indigenous students?

In addition, this session was also an opportunity to generate and address questions of interest from members of the mathematics community related to the historical, cultural, and political consequences of the colonization and other issues raised by the TRC.

Here is a question that we, the co-organizers of the session, tried to address through our choice of speakers: “I just teach mathematics, so what can I do about reconciliation?”

The content of the session presentations can be roughly divided into the following categories:

- Reconciliation and the consequences of the colonization and mathematical education (Contoise, Doolittle, Nicol, and Prince)
- Indigenous cultures and traditions and mathematics (Chauve, Fowler, and Wilson)
- Indigenous learners and math outreach, recruitment and retention (Alvarez, Desaulniers, and Jungic)
- Working with Indigenous learners (Barr, Jungic, McKinnon, and Pyke)
- Specific university programs for Indigenous learners (Barr, McKinnon, and MacLean)

It should be noted that all speakers talked about their personal involvement and experiences with the issues related to their presentations. On the one hand, this approach demonstrated to session participants a variety of ongoing projects, as well as the successes and challenges associated with those projects. On the other hand, possibly to the disappointment of some of the members of our audience, this approach also made it clear that the presenters still had more questions than answers regarding the complex issues of colonization, reconciliation, and Indigenization in general, and working with both Indigenous community and individual Indigenous learners in particular.

One of the most memorable presentations was given by Ms. Betty Wilson, an elder from the Tla’amin Nation. Ms. Wilson (who appears in the photo) talked about patterns in the Tla’amin basketry, canoe building, and traditional ways of sea navigation. She also showed us recent aerial photographs of the remains of large fish traps built by her ancestors on the Tla’amin traditional territory. The shapes, sizes, and the strategic positioning of the ancient structures left Ms. Wilson’s audience with the strong impression that the process of planning and building the fish traps must have been based on a deep understanding and knowledge of what we now call mathematical thinking, engineering, biology, and ecology.

Ms. Wilson’s presentation was complemented by a presentation and demonstration by Dr. Cedric Chauve, Professor of Mathematics from Simon Fraser University. As part of the Pacific Institute for Mathematical Sciences (PIMS) Callysto project, a group of SFU math

undergraduate students under Dr. Chauve’s supervision created two Jupyter notebooks about Tla’amin basketry. (See <https://cchauve.github.io/Callysto-Salish-Baskets>) The notebooks allow users to create 3D-images of decorated baskets of various shapes using units of the Tla’amin basketry patterns and basic types of symmetry for planar patterns. The notebooks use the Python programming language. It should be mentioned that this project was done in the collaboration between the Tla’amin Nation, Simon Fraser University, and PIMS.

Our hope was that the programs described by the presenters in the session would be inspiring for our audience. At the same time, we believe that we clearly communicated the message that those programs, without significant adjustments to specific academic and Indigenous communities, would not work. Specifically, many of our speakers and participants spoke about the necessity of making additional efforts to meet the needs of Indigenous learners and to encourage and support them in their quest to explore and further develop their mathematical talents. One of the reasons why it can be difficult to create math resources that include at least some elements of the Indigenous ways is that, contrary to one of the legacies of colonization, the First Nations in Canada are different peoples with different philosophies, histories, languages, cultures, traditions, and attitudes, with different realities and different goals for the future. Perhaps the most striking example of this statement is the work of Dr. Henry Fowler whose mathematics is based on the traditional culture of the Navajo Nation. Any similar project in Canada would require those involved to understand the mathematical underpinnings of the local First Nations culture. Using mathematical terms to articulate the issue – this global problem requires local solutions.

Each presentation was followed by questions from the audience. The time allocated to questions, about five minutes per presentation, often was not enough to completely answer the posted questions and/or to give the opportunity to all interested to ask questions.



Ms. Betty Wilson
Photo credit: Shawn Desaulniers

An Invitation for Contributions and Problem Solvers

C *CRUX Mathematicorum* has recently begun as an online open access journal effective the start of 2019. One of the changes is the return of features on problem solving geared to secondary school level students. It will reflect a resemblance to the *Mayhem* section of the journal that has been absent in recent years. These columns will offer insight into mathematical concepts and guide readers with problem solving ideas. In addition, contributors will share a range of ideas pertinent to mathematical problem solving suitable at the secondary level and beyond.

Please let interested young mathematicians and teachers of junior and senior high school students know about these developments. Suitable level problems will also appear in each issue with the intention that solvers will submit solutions for consideration and possible publication. If you are interested in contributing an article for this feature please send along a note to Shawn Godin (shawn.m.f.godin@gmail.com), John McLoughlin (johngm@unb.ca) or directly to the *CRUX* editor, Kseniya Garaschuk (crux.eic@gmail.com).

Issues can be found at the link: <https://cms.math.ca/crux>

Still, based on the feedback that we received during and after the session, we have no doubt that session participants appreciated learning about different perspectives on session topics. As one of our math academic colleagues stated, “In my opinion, the variety of speakers and presentation formats worked very well and made it a session that was much more lively and discussion generating than what I am used to in this kind of event.”

But the real purpose of this note is to elaborate on the following question: “What should the next CMS session on the topic of Indigenization and reconciliation be like?”

There were several components missing in our session, we think. Though we did invite an Indigenous student and a teacher from a rural Indigenous community, they were regrettably unable to attend. We do feel that this left a hole in the perspectives and voices heard during our session and we hope that these voices will be able to be heard at future such sessions. Our focus on post-secondary math education may also leave an impression that we were not aware that the first manageable entry point into mathematics for Indigenous learners must come much earlier.

Another major gap that many of us that have been working with Indigenous communities struggled with is the lack of educational math resources for Indigenous learners at the high school and above levels. Almost everything that one is able to find in this context is aimed at a more introductory level: basic concepts of arithmetic, counting, and geometry. We believe that it is time for the math community to commit time and resources to address this important and possibly sensitive issue in coordination with the Indigenous community.

In our opinion, a group or a panel discussion could have been valuable, but only if it was very tightly moderated by someone with experience doing so. We think that otherwise there would have been several strong voices dominating and we may not have had a chance to hear different perspectives.

The format of a group discussion may also help to educate members of our mathematics community on issues such as the long-lasting consequences of the Indian Act, the issues and challenges surrounding Indigenous education, the problem of stereotypes and simplifications of historical facts, and the current political moment in Canadian history.

The group discussion format may also be more accessible to members of the Indigenous community, students, teachers, and elders. Such participants may not feel as comfortable as a typical academic with the “presentation followed by questions” format and may feel more at ease with time for open discussion. A well moderated open discussion format may also bring us closer to answering questions such as: “What would Indigenous students and educators like from the Canadian math community?” But also, questions like: “What is something that could work in the classroom; i.e., what are practical examples of approaches that educators have used in the classroom to take ‘colonial math’ and change it/adapt it/renew it - or replace it - so that it is approachable and/or inspiring/helpful/ suitable for the Indigenous students?”

We believe that our 2018 CMS Winter session demonstrated that the Canadian mathematics community is willing and interested to listen to what the Indigenous learners and educators have to say. We would like to believe that we also increased the awareness that we, members of the mathematics community, need to keep listening even if what we hear disturbs the rosy view of mathematical abstraction that we love so much.

We conclude this note by quoting one of the session participants, who articulated a point that was brought up by many of our session’s speakers, participants, and audience:

I think that my biggest take-away was that it all boils down to building and developing relationships – not something I find easy.

CSHPM Notes brings scholarly work on the history and philosophy of mathematics to the broader mathematics community. Authors are members of the Canadian Society for History and Philosophy of Mathematics (CSHPM). Comments and suggestions are welcome; they may be directed to either of the column's co-editors:

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(Writing About) Takeuti's Well-ordering Proof: A Collaboration Story

Eamon Darnell, *University of Toronto*

Aaron Thomas-Bolduc, *College of the Rockies*

We won the 2017 CSHPM student essay prize with our paper "Takeuti's Well-Ordering Proof: Finitistically Fine?" [3], now published in the proceedings of the 2017 CSHPM meeting [8]. We used the prize to defray the cost of our trip to the 2018 CSHPM meeting in Montréal, where we presented some early results from our newest joint project on axiomatic theories of truth.

The Takeuti project started back in 2013 when we took a graduate seminar on proof theory with Richard Zach (Aaron's PhD supervisor) at the University of Calgary. At that time, Eamon had just begun his MA, and Aaron had just begun his PhD. The majority of that course was devoted to Gerhard Gentzen's cut-elimination theorem and consistency proof(s) for first-order arithmetic.

Gentzen was the inventor of the sequent calculus (as well as natural deduction) for first-order quantified predicate logic. The cut-elimination theorem for the sequent calculus says that any theorem that can be proved using the cut rule can be proved without it. This is important because, among other things, it allows for straightforward proof-search for theorems of pure logic.

Gentzen's consistency proofs for first-order arithmetic ("pure arithmetic") [4, 5] use the well-ordering of ordinal notations for ordinals less than the first epsilon number, ϵ_0 , (i.e. ϵ_0 is the first ordinal such that $\epsilon = \omega^\epsilon$) to show that there is no proof of the empty sequent from a proof with only arithmetical initial sequents—in other words, that a contradiction cannot be derived from arithmetical premises.

That those ordinal notations are well-ordered is fairly obvious—they're notations for *ordinals* after all—but confirming that from a finitist or constructivist stance is quite another matter. In particular, finitists following Hilbert who denied the correctness of reasoning with completed infinities—transfinite sets, for example—could not accept the well-ordering of ordinal notations based on the well-ordering of the ordinals.

Les articles de la SCHPM présente des travaux de recherche en histoire et en philosophie des mathématiques à la communauté mathématique élargie. Les auteurs sont membres de la Société canadienne d'histoire et de philosophie des mathématiques (SCHPM). Vos commentaires et suggestions sont le bienvenue; ils peuvent être adressées à l'une des co-rédacteurs:

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In his book *Proof Theory* [7], Gaisi Takeuti gives a proof that the ordinal notations for ordinals less than ϵ_0 in Cantor normal form—those used by Gentzen in his second consistency proof—are well ordered. In particular, he gives a syntactic proof that he claims is acceptable from what he calls the "Hilbert-Gentzen Finitist Standpoint". This is essentially a standpoint that allows the use of non-primitive recursion and can justify small amounts of transfinite induction, one which accords with his interpretation of the eponymous fathers of proof theory.

Richard Zach suggested we work on different aspects of Takeuti's proof for our final papers for his seminar on proof theory. Aaron wrote about the finitistic acceptability of Takeuti's proof along with some of the historical background—Cantor, Gentzen and Hilbert. Eamon laid out the entire proof and explained and commented on it. This is indicative of how our joint projects tend to go: Aaron works on historical or philosophical aspects, and Eamon works especially on formal aspects and their consequences. That said, we spent many hours together, usually over food and/or drinks, working through the proof to make sure we understood every step.

Richard Zach later suggested we combine our papers into something publishable, so we literally stuck our papers together to look at what we needed to work on. For a while, we were considering trying to finish and publish a paper of more than 40 pages.

We also gave a joint presentation (our first) at the Association of Symbolic Logic Winter Meeting in January 2014. Although we wouldn't present on that material again until the CSHPM meeting in 2017, we continued to work on the Takeuti project between our other projects, often via Skype after Eamon left to pursue his PhD at the University of Toronto.

In preparing our submission for the CSHPM meeting, we decided to split the project back into two parts: the largely historical and philosophical paper we presented and published with the CSHPM, and an annotated reconstruction of Takeuti's proof titled, "Takeuti's Well-Ordering Proof: An Accessible Reconstruction" (pun intended), which is currently under review.

We think the latter paper is worth publishing because Takeuti's proof is potentially quite important for the philosophy of mathematics as well as in constructive mathematics and proof theory, but we found the proof to be very dense and hard to follow—Takeuti doesn't even present all of his inductions in the same order.

In the intervening period, Aaron organized a graduate conference on philosophy of language and logic at UCalgary, held in May 2016, where Eamon gave a paper titled, “Is Hume’s Principle Analytic in Frege’s Sense?” Aaron, who was working on a dissertation on Neo-logicism—the modern descendant of Gottlob Frege’s logicist program that attempted to reduce mathematics to (second-order) logic—gave (rather harsh) comments. In that paper, Eamon used the theory of numerosities from non-standard analysis, developed by Vieri Benci and Mauro Di Nasso [1], to show that a principle central to logicism and neo-logicism can’t have the foundational status often attributed to it. In his comments, Aaron argued that Eamon had done far more work than was necessary to establish his conclusion. Nevertheless, Eamon’s result was interesting, and ultimately quite useful.

Once again we combined and expanded our work, with Eamon working in particular on the complex mathematics and Aaron on the philosophy (though there is always plenty of overlap with many late-night discussions working out the details of all aspects of our projects). We presented the beginnings of a paper to the Society for the Study of the History of Analytic Philosophy in 2017. That paper then became chapter 4 of Aaron’s dissertation, and has recently been published as, “Is Hume’s Principle Analytic?” [2].

Our latest project, the preliminaries of which we presented to the CSHPM in May 2018, is part of Eamon’s dissertation project on axiomatic theories of truth—a topic that Aaron has presented on a number of times, though he has not published on it so far. Once again, Eamon is working on a novel proof of philosophical and mathematical interest that will fit nicely with the work Aaron has done previously.

To step back, encouragement and a suggestion from Richard Zach to work on an obscure proof has turned into a long and fruitful collaboration on a number of topics intersecting logic, philosophy and mathematics. So, thanks Richard! We intend to continue working and writing together for years to come.

Aaron Thomas-Bolduc (athomasb@ucalgary.ca) finished his PhD in philosophy at the University of Calgary in the summer of 2018 under the supervision of Richard Zach. In addition to the topics mentioned above, he has published on the connection between Georg Cantor’s theology and metaphysics of mathematics. He is currently working as the Professional Math Tutor at College of the Rockies in Cranbrook, BC.

Eamon Darnell (eamon.darnell@mail.utoronto.ca) is currently working on his PhD in philosophy at the University of Toronto under the supervision of Philip Kremer. His dissertation is focused on the development of typed and type-free axiomatic theories of truth over second-order arithmetic and their philosophical uses and implications.

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CSHPM Student Award

Since 2013, the Canadian Society for History and Philosophy of Mathematics has awarded a prize to the best student paper presented at its Annual Meeting and published in its Proceedings. The award is a grant of five hundred dollars. Additionally, CSHPM now provides six travel grants of \$250 each to partially reimburse expenses of students who present papers at its annual meeting. Information on applying for these grants will be distributed at CSHPM’s gathering during the HSSFC Congress in Vancouver, June 2–4. See www.cshpm.org/meeting.

In addition to the CSHPM Notes column in this issue featuring the 2017 awardees, two of the three previous winners have shared their current work with CMS Notes readers: Sylvia Nickerson via “How Objects Reveal Mathematical Culture” in September 2016, and Robert Moir with “Exploring Epistemology of Applied Math: Where Mathematicians and Philosophers Meet” in December 2016.

2019 Adrien Pouliot Award

CALL FOR NOMINATIONS

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 programs, 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.

CMS aims to promote and celebrate diversity in the broadest sense. We strongly encourage department chairs and nominating committees to put forward nominations for outstanding colleagues regardless of race, gender, ethnicity or sexual orientation.

Nominations must be received by the CMS Office **no later than April 30, 2019**.

Please submit your nomination electronically, preferably in PDF format, to apaward@cms.math.ca.

Nomination requirements

- Include contact information for both nominee and nominator.
- Describe the nominated individual's or team's sustained contributions to mathematics education. This description should provide some indication of the time period over which these activities have been undertaken and some evidence of the success of these contributions. This information must not exceed four pages.
- Two letters of support from individuals other than the nominator should be included with the nomination.
- Curricula vitae should not be submitted since the information from them relevant to contributions to mathematics education should be included in the nomination form and the other documents mentioned above.
- If nomination was made in the previous year, please indicate this.
- Members of the CMS Education Committee will not be considered for the award during their tenure on the committee.

Renewals

Individuals who made a nomination last year can renew this nomination by simply indicating their wish to do so by the deadline date. In this case, only updating materials need be provided as the original has been retained.

Prix Adrien Pouliot 2019

APPEL DE CANDIDATURES

Nous sollicitons la candidature de personne ou de groupe de personnes ayant contribué d'une 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.

La SMC a pour but de promouvoir et de célébrer la diversité au sens le plus large. Nous encourageons fortement les directeurs de département et les comités de mise en candidature à proposer des collègues exceptionnels sans distinction de race, de genre, d'appartenance ethnique ou d'orientation sexuelle.

Les mises en candidature doivent parvenir au bureau de la SMC **avant le 30 avril 2019**.

Veuillez faire parvenir votre mise en candidature par voie électronique, de préférence en format PDF, à prixap@smc.math.ca

Conditions de candidature

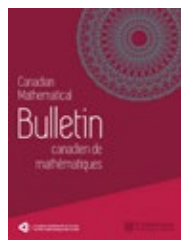
- Inclure les coordonnées du/des candidat(s) ainsi que du/des présentateur(s).
- Décrire en quoi la personne ou le groupe mis en candidature a contribué de façon soutenue à des activités mathématiques. Donner un aperçu de la période couverte par les activités visées et du succès obtenu. La description ne doit pas être supérieure à quatre pages.
- Le dossier de candidature comportera deux lettres d'appui signées par des personnes autres que le présentateur.
- Il est inutile d'inclure des curriculums vitae, car les renseignements qui s'y trouvent et qui se rapportent aux activités éducatives visées devraient figurer sur le formulaire de mise en candidature et dans les autres documents énumérés ci-dessus.
- Si la candidature a été soumise l'année précédente, veuillez l'indiquer.
- Les membres du Comité d'éducation de la SMC ne pourront être mis en candidature pour l'obtention d'un prix pendant la durée de leur mandat au Comité.

Renouveler une mise en candidature

Il est possible de renouveler une mise en candidature présentée l'année précédente, 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.

CANADIAN MATHEMATICAL BULLETIN (CMB)

EDITOR-IN-CHIEF (EIC)



The CMS invites expressions of interest for the Editor-In-Chief (EIC) of CMB; two EICs are being solicited, with a term scheduled to commence January 1, 2020. Funding support from the CMS is available for both these EIC positions.

Since 1958, the Canadian Mathematical Bulletin (CMB) has been committed to publishing original mathematical research of high standard following rigorous academic peer review. New research papers are published continuously online and collated into print issues four times each year.

Expressions of interest should include a covering letter indicating the type of editorships you are interested in or becoming involved with, your curriculum vitae, and an expression of views regarding the publication. For EIC consideration, please also include an indication of support from your respective university.

Please submit your expression of interest electronically to: CMB-EIC-2019@cms.math.ca before April 15, 2019.

Current CJM/CMB Editorial Board

Louigi Addario-Berry (McGill)	12/2021	Editor-in-Chief CJM
Eyal Goren (McGill)	12/2021	Editor-in-Chief CJM
Jie Xiao (Memorial)	12/2019	Editor-in-Chief CMB
Xiaoqiang Zhao (Memorial)	12/2019	Editor-in-Chief CMB
Fabrizio Andreatta (Università Studi di Milano)	12/2021	Associate Editor
Jason Bell (Waterloo)	12/2020	Associate Editor
Hans Boden (McMaster)	12/2020	Associate Editor
Kathrin Bringmann (Cologne)	12/2023	Associate Editor
Alexander Brudnyi (Calgary)	12/2020	Associate Editor
Krzysztof Burdzy (University of Washington)	12/2021	Associate Editor
Guillaume Chapuy (CNRS, Paris)	12/2021	Associate Editor
Ilijas Farah (York)	12/2020	Associate Editor
Ailana Fraser (UBC Vancouver)	12/2020	Associate Editor
Alexander Furman (Illinois Chicago)	12/2021	Associate Editor
Wee Teck Gan (National University of Singapore)	12/2021	Associate Editor
Philippe Gille (CNRS & Université Claude Bernard)	12/2021	Associate Editor
Vojkan Jaksic (McGill)	12/2021	Associate Editor
Lisa Jeffrey (Toronto)	12/2021	Associate Editor
Erwin Lutwak (Courant Institute)	12/2023	Associate Editor
Javad Mashreghi (Laval)	12/2020	Associate Editor
Marco Merkli (Memorial)	12/2020	Associate Editor
Nilima Nigam (Simon Fraser)	12/2020	Associate Editor
Malabika Pramanik (UBC Vancouver)	12/2023	Associate Editor
Alistair Savage (Ottawa)	12/2021	Associate Editor
Daniel Wise (McGill)	12/2018	Associate Editor
Jianhong Wu (York)	12/2023	Associate Editor

BULLETIN CANADIEN DE MATHÉMATIQUES (BCM)

RÉDACTEUR EN CHEF

La SMC invite les personnes intéressées par un poste de rédacteur en chef au BCM à lui faire part de leur intérêt. Deux postes de rédacteurs en chef sont à pourvoir, pour un mandat qui commencera en le 1 janvier 2020. La SMC offre du soutien financier pour ces deux postes.

Depuis 1958, le Bulletin canadien de mathématiques s'engage à publier des recherches en mathématiques, originales et de haut niveau, suivant de rigoureux examens par des pairs. Les articles de recherches sont disponibles en tout temps en ligne et sont rassemblés en quatre éditions imprimées par année.

Les propositions de candidature comprendront les éléments suivants : une lettre de présentation précisant le type de poste qui vous intéresse, votre curriculum vitae et un texte dans lequel vous exprimez votre opinion et vos idées par rapport à la publication. Pour les postes de rédacteur en chef, veuillez ajouter une preuve du soutien de votre université.

Veuillez faire parvenir votre candidature par courriel à : BCM-REC-2019@smc.math.ca au plus tard le 15 avril 2019.

Conseil de redaction pour le JCM et le BCM à présent :

Louigi Addario-Berry (McGill)	12/2021	Rédacteur en chef JCM
Eyal Goren (McGill)	12/2021	Rédacteur en chef JCM
Jie Xiao (Memorial)	12/2019	Rédacteur en chef BCM
Xiaoqiang Zhao (Memorial)	12/2019	Rédacteur en chef BCM
Fabrizio Andreatta (Università Studi di Milano)	12/2021	Rédacteur associé
Jason Bell (Waterloo)	12/2020	Rédacteur associé
Hans Boden (McMaster)	12/2020	Rédacteur associé
Kathrin Bringmann (Cologne)	12/2023	Rédactrice associée
Alexander Brudnyi (Calgary)	12/2020	Rédacteur associé
Krzysztof Burdzy (University of Washington)	12/2021	Rédacteur associé
Guillaume Chapuy (CNRS, Paris)	12/2021	Rédacteur associé
Ilijas Farah (York)	12/2020	Rédacteur associé
Ailana Fraser (UBC Vancouver)	12/2020	Rédactrice associée
Alexander Furman (Illinois Chicago)	12/2021	Rédacteur associé
Wee Teck Gan (National University of Singapore)	12/2021	Rédacteur associé
Philippe Gille (CNRS & Université Claude Bernard)	12/2021	Rédacteur associé
Vojkan Jaksic (McGill)	12/2021	Rédacteur associé
Lisa Jeffrey (Toronto)	12/2021	Rédactrice associée
Erwin Lutwak (Courant Institute)	12/2023	Rédacteur associé
Javad Mashreghi (Laval)	12/2020	Rédacteur associé
Marco Merkli (Memorial)	12/2020	Rédacteur associé
Nilima Nigam (Simon Fraser)	12/2020	Rédactrice associée
Malabika Pramanik (UBC Vancouver)	12/2023	Rédactrice associée
Alistair Savage (Ottawa)	12/2021	Rédacteur associé
Daniel Wise (McGill)	12/2018	Rédacteur associé
Jianhong Wu (York)	12/2023	Rédacteur associé

CMS Research Prizes

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

The **Coxeter-James Prize** Lectureship recognizes young mathematicians who have made outstanding contributions to mathematical research. The recipient shall be a member of the Canadian mathematical community. 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. For more information, visit: <https://cms.math.ca/Prizes/cj-nom>

The **Jeffery-Williams Prize** Lectureship recognizes mathematicians who have made outstanding contributions to mathematical research. The recipient shall be a member of the Canadian mathematical community. A nomination can be updated and will remain active for three years. For more information: <https://cms.math.ca/Prizes/jw-nom>

The **Krieger-Nelson Prize** Lectureship recognizes outstanding research by a female mathematician. The recipient shall be a member of the Canadian mathematical community. A nomination can be updated and will remain active for two years. For more information: <https://cms.math.ca/Prizes/kn-nom>

CMS aims to promote and celebrate diversity in the broadest sense. We strongly encourage department chairs and nominating committees to put forward nominations for outstanding colleagues for research in the mathematical sciences regardless of race, gender, ethnicity or sexual orientation. A candidate can be nominated for more than one research prize in the applicable categories; several candidates from the same institution can be nominated for the same research prize.

CMS research prizes are gender-neutral, except for the Krieger-Nelson prize, which is awarded to women only. Nominations of eligible women for the general research prizes in addition to the Krieger-Nelson Prize are strongly encouraged.

The deadline for nominations, including at least three letters of reference, is **September 30, 2019**. Nomination letters should list the chosen referees and include a recent curriculum vitae for the nominee. Some arms-length referees are strongly encouraged. Nominations and the reference letters from the chosen referees should be submitted electronically, preferably in PDF format, to the corresponding email address and **no later than September 30, 2019**:

Coxeter-James: cjprize@cms.math.ca

Jeffery-Williams: jwprize@cms.math.ca

Krieger-Nelson: knprize@cms.math.ca

Prix de recherche de la SMC

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.

Le **Prix Coxeter-James** rend hommage aux jeunes mathématiciens qui se sont distingués par l'excellence de leur contribution à la recherche mathématique. Cette personne doit être membre de la communauté mathématique canadienne. Les candidats sont admissibles jusqu'à dix ans après l'obtention de leur doctorat. Toute mise en candidature est modifiable et demeurera active l'année suivante, à moins que la mise en candidature originale ait été faite la 10^e année suivant l'obtention du doctorat. Pour les renseignements, voir : <https://cms.math.ca/Prix/cj-nom>

Le **Prix Jeffery-Williams** rend hommage aux mathématiciens ayant fait une contribution exceptionnelle à la recherche mathématique. Cette personne doit être membre de la communauté mathématique canadienne. Toute mise en candidature est modifiable et demeurera active pendant trois ans. Pour les renseignements, voir : <https://cms.math.ca/Prix/jw-nom>

Le **Prix Krieger-Nelson** rend hommage aux mathématiciennes qui se sont distinguées par l'excellence de leur contribution à la recherche mathématique. La lauréate doit être membre de la communauté mathématique canadienne. Toute mise en candidature est modifiable et demeurera active pendant deux ans. Pour les renseignements, voir : <https://cms.math.ca/Prix/kn-nom>

La SMC a pour but de promouvoir et de célébrer la diversité au sens le plus large. Nous encourageons fortement les directeurs de département et les comités de mise en candidature à proposer des collègues exceptionnels pour la recherche dans les sciences mathématiques sans distinction de race, de genre, d'appartenance ethnique ou d'orientation sexuelle. Une personne peut être mise en candidature pour plus d'un prix de recherche dans les catégories applicables ; plusieurs candidats d'un même institut peuvent être nommés pour le même prix de recherche.

Les prix de recherche de la SMC sont non sexistes, à l'exception du prix Krieger-Nelson, qui est décerné uniquement aux femmes. Les candidatures de femmes éligibles pour les prix de recherche généraux en plus du prix Krieger-Nelson sont fortement encouragées.

La date limite pour déposer une candidature, qui comprendra au moins trois lettres de référence, est le **30 septembre 2019**. Le dossier de candidature doit comprendre le nom des personnes données à titre de référence ainsi qu'un curriculum vitae récent du candidat ou de la candidate. Veuillez faire parvenir les mises en candidature et lettres de référence par voie électronique, de préférence en format PDF, avant la date limite, à l'adresse électronique correspondante et **au plus tard le 30 septembre 2019** :

Coxeter-James : prixcj@smc.math.ca

Jeffery-Williams : prixjw@smc.math.ca

Krieger-Nelson : prixkn@smc.math.ca

2019 Graham Wright Award for Distinguished Service

CALL FOR NOMINATIONS

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. The award was renamed in 2008, in recognition of Graham Wright's 30 years of service to the Society as the Executive Director and Secretary.

CMS aims to promote and celebrate diversity in the broadest sense. We strongly encourage department chairs and nominating committees to put forward nominations for outstanding colleagues regardless of race, gender, ethnicity or sexual orientation.

Nominations should include a reasonably detailed rationale and be submitted by **March 31, 2019**.

All documentation should be submitted electronically, preferably in PDF format, by the appropriate deadline, to gwaward@cms.math.ca

Prix Graham-Wright pour service méritoire 2019

APPEL DE CANDIDATURES

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. Ce prix était renommé à compter de 2008 en hommage de Graham Wright pour ses 30 ans de service comme directeur administratif et secrétaire de la SMC.

La SMC a pour but de promouvoir et de célébrer la diversité au sens le plus large. Nous encourageons fortement les directeurs de département et les comités de mise en candidature à proposer des collègues exceptionnels sans distinction de race, de genre, d'appartenance ethnique ou d'orientation sexuelle.

Pour les mises en candidature prière de présenter des dossiers avec une argumentation convaincante et de les faire parvenir, **le 31 mars 2019** au plus tard.

Veuillez faire parvenir tous les documents par voie électronique, de préférence en format PDF, avant la date limite à prixgw@smc.math.ca



European Girls'
Mathematical
Olympiad

European Girls' Mathematical Olympiad / Olympiades européennes de mathématiques pour les filles

The Canadian Mathematical Society (CMS) is pleased to announce the members of Canada's team to compete in the European Girls' Mathematical Olympiad (EGMO), in Kyiv, Ukraine April 7-13, 2019. EGMO Team Canada is:

Katie Forbes - [Edmonton, AB]

Anna Krokhine - [Toronto, ON]

Siyu Elaine Liu - [Oakville, ON]

Zixian Ruby Wei - [Charlottetown, PE]

Each student competes individually to solve six questions, in a competition lasting two days, four and a half hours each day. The students were chosen largely based on the results of the 2018 Canadian Open Mathematics Challenge (COMC) written in November, as well as a Team Selection Test that was sent to the top 15 girls from the COMC.

La Société mathématique du Canada (SMC) est fière d'annoncer la composition de l'équipe qui représentera le Canada aux Olympiades européennes de mathématiques pour filles (OEMF), qui se tiendront à Kiev en Ukraine du 7 au 13 avril 2019. Voici la composition de l'équipe canadienne :

Katie Forbes - [Edmonton, Alb]

Anna Krokhine - [Toronto, Ont]

Siyu Elaine Liu - [Oakville, Ont]

Zixian Ruby Wei - [Charlottetown, Î.-P.-É.]

Chaque élève devra répondre individuellement à six questions lors d'un concours de deux jours, à raison de quatre heures et demie par jour. Les participantes ont été choisies principalement en fonction de leurs résultats au Défi ouvert canadien de mathématiques (DOCM) de novembre 2018 et du test de sélection pour la composition de l'équipe par les quinze meilleures participantes du DOCM.

2019 Canadian Mathematical Society

Summer Meeting

June 7 - 10, 2019

University of Regina, Regina, Saskatchewan

Public Lecture

Nilima Nigam (Simon Fraser University)

Plenary Lectures

Denis Auroux (Berkeley/Harvard)

Caroline Colijn, (SFU)

Gregory Lawler (Chicago)

Grigoris Paouris (Texas A&M)

Pham Huu Tiep (Rutgers)

Prizes**Excellence in Teaching Award**

Andrea Fraser (Dalhousie)

Jeffery-Williams Prize

Jeremy Quastel (Toronto)

Krieger-Nelson Prize

Julia Gordon (UBC)

Scientific Directors:Allen Herman (University of Regina)
allen.herman@uregina.caAlexander Litvak (Alberta)
alivak@ualberta.caKaren Meagher (University of Regina)
karen.meagher@uregina.ca

Réunion d'été

de la SMC 2019

7 - 10 juin 2019

Université de Regina, Regina, Saskatchewan

Conférence publique

Nilima Nigam (Simon Fraser University)

Conférences plénières

Denis Auroux (Berkeley/Harvard)

Caroline Colijn, (SFU)

Gregory Lawler (Chicago)

Grigoris Paouris (Texas A&M)

Pham Huu Tiep (Rutgers)

Prix**Prix d'excellence en enseignement**

Andrea Fraser (Dalhousie)

Prix Jeffery-Williams

Jeremy Quastel (Toronto)

Prix Krieger-Nelson

Julia Gordon (UBC)

Directeurs scientifiques :Allen Herman (Université de Regina)
allen.herman@uregina.caAlexander Litvak (Alberta)
alivak@ualberta.caKaren Meagher (Université de Regina)
karen.meagher@uregina.ca

2019 CMS Winter Meeting

December 6-9, 2019

Deadline: March 31, 2019

The Chelsea Hotel, Toronto, Ontario

CALL FOR SESSIONS

The Canadian Mathematical Society (CMS) welcomes and invites session proposals for the 2019 CMS winter meeting in Toronto from December 6-9.

Proposals should include (1) names, affiliations, and contact information for all session co-organizers, (2) title and brief description of the focus and purpose of the session, (3) a preliminary list of potential speakers, with their affiliations and if they have agreed to participate, along with a total number of expected speakers.

Sessions will take place December 7, 8, and 9. The meeting schedule will accommodate 9 speakers per full day, and 4 or 5 per half day. Sessions will be advertised in the CMS Notes, on the web site and in the AMS Notices. Speakers will be requested to submit abstracts, which will be published on the web site and in the meeting program. Those wishing to organize a session should send a proposal to the Scientific Directors. Those submitting proposals are encouraged to pay attention to the diversity of both the session invitees and the proposed session organizers.

Proposals should be submitted by **March 31, 2019**.

Scientific Directors:

Patrick Ingram (York University) pingram@yorku.ca

Jane Heffernan (York University) jmheffer@yorku.ca

Réunion d'hiver de la SMC 2019

6-9 décembre 2019

Date limite : 31 mars 2019

The Chelsea Hotel, Toronto, Ontario

APPEL DE PROPOSITIONS DE SESSIONS

La Société mathématique du Canada (SMC) invite la communauté mathématique à proposer des sessions pour sa Réunion d'hiver 2019, qui se tiendra à Toronto du 6 au 9 décembre.

Ces propositions doivent comprendre : 1) le nom, l'affiliation et les personnes à contacter pour tous les coorganiseurs de session; 2) le titre et une brève description de l'orientation et des objectifs de la session; 3) une liste préliminaire de conférenciers potentiels avec leur affiliation et leur intention de participer, ainsi que le nombre de conférenciers prévus.

Les sessions se dérouleront les 7, 8, et 9 décembre. Le format de la Réunion peut accommoder 9 conférenciers par journée pleine, et 4 ou 5 par demi-journée. Toutes les sessions seront annoncées dans les Notes de la SMC, sur le site Web et dans les notices de l'AMS. Les conférenciers devront présenter un résumé, qui sera publié sur le site Web et dans le programme de la Réunion. Toute personne qui souhaiterait organiser une session est priée de faire parvenir une proposition aux directeurs scientifiques. Nous vous invitons, dans votre proposition, à porter attention à la diversité des personnes invitées et des organisateurs de la session proposée.

Ces demandes doivent nous parvenir au plus tard le **31 mars 2019**.

Directeurs scientifiques :

Patrick Ingram (York University) pingram@yorku.ca

Jane Heffernan (York University) jmheffer@yorku.ca



CMS ELECTION NOTICE

This year the CMS will be electing fifteen (15) officers and directors. The election slate will consist of the following positions:

Executive Committee members (length of elected term in parentheses):

- President-Elect (1 year)/President (2 years)/Past-President (1 year);
- Vice-President – Atlantic (N.B., P.E.I., N.S., N.L.) (2 years);
- Vice-President – Quebec (4 years);
- Vice-President – Ontario (4 years);
- Vice-President – West (Alta., Sask., Man., N.W.T., Nunavut) (4 years); and
- Vice-President – Pacific (B.C., Yukon) (2 years).

Board of Directors members (length of elected term in parentheses):

- Atlantic – 1 member (4 years);
- Quebec – 2 members (4 years);
- Ontario – 2 members (4 years);
- West – 2 members (4 years);
- Pacific – 1 member (4 years); and
- Student – 1 member (2 years).

The CMS will hold the election electronically in April for a period of 4 weeks and instructions on how to vote will be emailed to members prior to the election date. Updated information will be periodically e-mailed to members, including the final slate of candidates, and posted on the CMS website at: <https://cms.math.ca/Elections/2019/>

The results will be formally approved in June at the Annual General Meeting (AGM) being held at the CMS Summer Meeting in Regina, Saskatchewan. All CMS Members are invited to participate at the Annual General Meeting.

David Pike
Chair, CMS Nominating Committee

AVIS D'ÉLECTION DE LA SMC

Cette année, la SMC élira quinze (15) dirigeants et administrateurs. Des élections auront lieu aux postes suivants :

Comité exécutif (*longueur du mandat entre parenthèses*) :

- Président élu (1 an)/Président (2 ans)/Président sortant (1 an)
- Vice-président – Atlantique (N.-B., Î.-P.-É., N.-É., T.-N.-L.) (2 ans)
- Vice-président – Québec (4 ans)
- Vice-président – Ontario (4 ans)
- Vice-président – Ouest (Alb., Sask., Man., T.-N.-O., Nunavut) (4 ans)
- Vice-président – Pacifique (C.-B., Yukon) (2 ans)

Conseil d'administration (*longueur du mandat entre parenthèses*) :

- Atlantique – 1 membre (4 ans)
- Québec – 2 membres (4 ans)
- Ontario – 2 membres (4 ans)
- Ouest – 2 membres (4 ans)
- Pacifique – 1 membre (4 ans)
- Étudiant – 1 membre (2 ans)

Les membres de la SMC recevront par courriel la marche à suivre pour voter électroniquement et auront quatre semaines pour se prononcer. Nous enverrons des mises à jour périodiques aux membres par courriel, dont la liste des candidats et candidates, et nous publierons le tout sur le site Web de la SMC à l'adresse <http://smc.math.ca/Elections/2019/f>

Les résultats seront officiellement adoptés à l'assemblée générale annuelle (AGA) de la SMC, en juin, à la Réunion d'été de la SMC qui se tiendra à Regina, en Saskatchewan. Tous les membres de la SMC sont invités à participer à l'AGA.

David Pike
Président du Comité des mises en candidature

The Canadian Mathematical Society and Intact Foundation make Crux Mathematicorum available for free online



With the support of the Intact Foundation, the Canadian Mathematical Society (CMS) will be making Crux Mathematicorum (CRUX), an internationally respected problem solving journal, available as a free online publication beginning this month. This initiative means every high school teacher and student in Canada and globally will be able to access CRUX as a free resource.

CRUX is produced 10 times per year and of particular interest to high school students and teachers who participate in various national and international competitions as well as to individuals who enjoy the challenge of solving sophisticated mathematics problems. Greater access to CRUX will increase students' interest in mathematics, particularly for students in remote areas, as well as encourage more students to pursue mathematically dependant careers.

La Société mathématique du Canada et la Fondation Intact permettre la publication en ligne gratuite de Crux Mathematicorum

Grâce au soutien de la Fondation Intact, la Société mathématique du Canada (SMC) produira sa revue de résolution de problèmes de renommée internationale, (CRUX), en accès en ligne gratuit à partir de ce mois-ci. Cette initiative permettra à tous les enseignants et élèves du secondaire du Canada et d'ailleurs d'accéder gratuitement au CRUX.

Publié 10 fois l'an, le CRUX est d'un intérêt particulier pour les élèves et les enseignants du secondaire qui participent à des concours nationaux et internationaux, ou pour toute personne qui aime résoudre des problèmes mathématiques complexes. En élargissant ainsi l'accès au CRUX, on rehaussera l'intérêt des élèves pour les mathématiques, en particulier dans les régions éloignées, ce qui incitera davantage d'élèves à poursuivre des carrières axées sur les mathématiques.



Complimentary Online access to CJM and CMB now available to CMS members!

The Canadian Mathematical Society (CMS) has established a publishing partnership with Cambridge University Press for the production of the Canadian Journal of Mathematics (CJM) and the Canadian Mathematical Bulletin (CMB). Effective immediately, all CMS members receive complimentary online access to the CJM and the CMB through his/her CMS member portal.

CMS members can also receive print subscriptions at a discounted price by contacting subscriptions_newyork@cambridge.org (Americas) and journals@cambridge.org (United Kingdom and Rest of World).

For further information, please contact memberships@cms.math.ca.

Accès en ligne gratuit au JCM et au BCM maintenant disponible pour les membres de la SMC !

La Société mathématique du Canada (SMC) a conclu un partenariat avec Cambridge University Press pour la publication du *Journal canadien de mathématiques* (JCM) et du *Bulletin canadien de mathématiques* (BCM). À compter de maintenant, tous les membres de la SMC bénéficient d'un accès en ligne gratuit au JCM et au BCM par le portail des membres de la SMC.

Les membres peuvent également s'abonner aux versions papier à prix réduit en écrivant à subscriptions_newyork@cambridge.org (Amérique) ou à journals@cambridge.org (Royaume-Uni et reste du monde).

Pour plus amples renseignements, veuillez communiquer au adhesions@smc.math.ca.



Canadian Mathematical Society
Société mathématique du Canada

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University of Ottawa

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Réunion du 75^e anniversaire de la Société mathématique du Canada

Université d'Ottawa

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Request for Submissions!

Research Notes brings mathematical research ideas forth to the CMS readership in a generally accessible manner that promotes discussion of relevant topics including research (both pure and applied), activities, and noteworthy news items. Comments and suggestions are welcome.

Submissions are currently being sought for volume (51) of *CMS Notes*. To contribute contact Patrick Ingram, York University (pingram@yorku.ca)

Demande de soumission!

Les Notes de recherche présentent des sujets mathématiques aux lecteurs de la SMC dans un format généralement accessible qui favorise les discussions sur divers sujets pertinents, dont la recherche (pure et appliquée), les activités et des nouvelles dignes de mention. Vos commentaires et suggestions sont les bienvenus.

Nous acceptons en ce moment des articles pour le volume 51 des *Notes de la SMC*. Pour contribuer à ce volume, veuillez contacter à Patrick Ingram, Université York (pingram@yorku.ca)



CMS/Air Canada Charitable Pooling

The CMS is part of the **CMS/Air Canada Charitable Pooling program for non-profit organizations**.

Charitable Pooling is a mechanism by which Air Canada passengers can donate some or all of their earned frequent flyer miles to a non-profit organization. The organization can then use those miles to pay airfares for travel that aligns with the organization's mission.

Every year, the CMS uses frequent flyer miles that have been donated to our Charitable Pooling account for IMO team travel and travel for graduate students/post-docs to attend CMS meetings.

Since anyone can donate their Air Canada frequent flyer miles, please spread the word to your colleagues, family, and friends. The general public is also invited to donate their miles.

To donate your frequent flyer miles to the CMS, please visit the following link: <https://beyondmiles.aeroplan.com/eng/charity/941>



Programme de dons SMC/Air Canada

La SMC participe au **programme de dons SMC/Air Canada pour les organismes sans but lucratif**.

Ce programme permet aux passagers d'Air Canada de donner une partie ou la totalité de leurs milles Aéroplan à un organisme sans but lucratif. L'organisme peut alors utiliser ces milles pour payer des déplacements qui concordent avec sa mission.

Chaque année, la SMC utilise les milles Aéroplan qui ont été donnés à son compte d'organisme de charité pour les déplacements de l'équipe de l'OIM et des étudiants des cycles supérieurs et postdoctorants qui assistent à ses Réunions.

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Pour faire don de milles Aéroplan à la SMC, suivez le lien suivant : <https://beyondmiles.aeroplan.com/fra/charity/941>

2019 CMS Fellows

CALL FOR NOMINATIONS

The CMS Fellows program recognises CMS members who have made excellent contributions to mathematical research, teaching, or exposition; as well as having distinguished themselves in service to Canada's mathematical community. In exceptional cases, outstanding contributions to one of the below areas may be recognised by fellowship.

- Making significant contributions to the profession and to the Canadian mathematical community.
- Increasing the relevance and visibility of the CMS.

Nomination for the 2019 CMS Fellows is in its second year and is part of the implementation process (2018 and 2019).

For more information on nomination requirements and eligibility, please click <https://cms.math.ca/Fellows/nom>

For a nomination to be complete, all nomination requirements should be included. A CMS member may nominate a maximum of two Fellows in a calendar year. Any person who is nominated and is not selected a Fellow will remain an active nominee for a further two years.

The CMS aims to promote and celebrate diversity in the broadest sense. Nominations for outstanding colleagues are encouraged regardless of race, gender, ethnicity or sexual orientation.

All documentation, including letters of support, should be submitted electronically, preferably in PDF format, to fellows@cms.math.ca no later than **March 31, 2019**.

Fellows de la SMC 2019

APPEL DE MISES EN CANDIDATURE

Le Programme des fellows récompense les membres de la SMC qui ont fait une contribution exceptionnelle aux mathématiques en recherche, en enseignement ou en représentations, tout en se distinguant au service de la communauté mathématique canadienne. Dans des cas exceptionnels, une contribution extraordinaire à l'un des domaines ci-dessous peut être reconnue par un titre de *fellows*.

- Faire une contribution importante à la profession et à la communauté mathématique canadienne.
- Rehausser la pertinence et la visibilité de la SMC.

Les candidatures aux *fellows* de la SMC 2019 en sont à leur deuxième année et font partie du processus de l'implantation du programme (2018 et 2019).

Pour les conditions de candidature et l'admissibilité, veuillez cliquer <https://cms.math.ca/Fellows/nom.f>

Les conditions de candidature énumérées doivent être incluses dans une candidature afin de constituer une candidature complète. Un membre de la SMC peut proposer un maximum de deux *fellows* par année civile.

La SMC a pour but de promouvoir et de célébrer la diversité au sens le plus large. Les mises en candidature pour des collègues exceptionnels sont encouragées sans distinction de race, de genre, d'appartenance ethnique ou d'orientation sexuelle.

Veuillez faire parvenir tous les documents par voie électronique, de préférence en format PDF, à fellows@smc.math.ca au plus tard le **31 mars 2019**.

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