Newsletter *Winter 2013*

Canadian Statistical Sciences community launches a new institute

Late last year, the Canadian Statistical Sciences Institute (CANSSI) / Institut canadien des sciences statistiques (INCASS) was launched. Christian Léger, president of the Statistical Society of Canada (SSC) announced its formation in a letter which said in part:

CANSSI will be a national virtual institute offering the leadership and infrastructure necessary to increase and further develop statistical sciences research in Canada and promote the discipline. Building on the international stature of the Canadian statistical community, CANSSI will seek to develop all areas of the statistical sciences, including interdisciplinary research where statistical innovation is essential to the development of other disciplines. Through national networks of researchers, CANSSI will tackle the big research questions in statistics of importance to science and the public interest, and will establish links with other disciplines and organizations that are heavy users and producers of data.

Much is afoot at CANSSI. Mary Thompson of the University of Waterloo has been appointed as the Scientific Director, and the Board of Governors, Scientific Advisory Committee, and five regional Associate Directors are all in place. Two calls for proposals have been released: (1) a call for expressions of interest for collaborative team projects, and (2) a call for proposals for CANSSI activities. Both have deadlines of February 28, 2013. Details on all of CANSSI are available at canssi.ca and incass.ca.

2013 will see several meetings related to CANSSI, including its annual meeting and sponsored sessions at the annual meeting of the SSC and a 3-day conference at the University of Waterloo.

Along with the three other mathematical sciences institutes, AARMS supports this new initiative. The institute grew out of a process of reflection within the Canadian statistical sciences community, in parallel with the Long Range Planning Exercise for the Mathematical and Statistical Sciences.

I am pleased to serve as the Atlantic Associate Director for CANSSI. If you have any ideas or would like more information, please don't hesitate to contact me.

~Hugh Chipman, Acadia University hugh.chipman@acadiau.ca

An AARMS Postdoc Reports

My name is Rogers Mathew and I am a post doctoral fellow in the Department of Mathematics and Statistics, Dalhousie University. I did my masters and Ph.D in computer science from the Indian Institute of Science. The fascination for theoretical computer science that I developed during my masters led me to the fields of algorithms, combinatorics, and graph theory.

The primary focus of my research has been in geometric graph theory where I work on geometric representations of graphs. In a mathematician's terminology, a graph is a collection of points (or nodes) and lines connecting some (possibly empty) subset of them. Geometric representation of graphs is a well studied topic in graph theory. A collection of sets represents a graph in a natural way, if to each node in the graph we associate a set from the collection such that two nodes in the graph have a line connecting them if and only if their corresponding sets intersect with each other. Such a graph is an intersection graph of sets from the collection. If each set in the collection is a geometric object, then the collection of sets form a geometric representation of the graph. Based on the properties of the geometric object chosen, different types of geometric representations exist. My doctoral thesis was on one such geometric representation called box representation, where the geometric objects chosen are k-dimensional, axis-parallel boxes. Such representations of graphs find application in problems in ecological sciences, operations research etc. They also aid in efficient storage of many real world graphs and networks in computers. Hence, designing efficient algorithms for finding near optimal geometric representations is a question of practical relevance.

An online algorithm is one that can process its input in the order that the input is fed to the algorithm, without having the entire input available from the start. Finding and analyzing online algorithms for certain sorting and colouring problems is another area of my interest. I would like to thank AARMS for presenting me with this wonderful opportunity to interact and work with people of similar interests.

News

News from the Atlantic Algebra Centre

The AAC's 15th mini course entitled Combinatorial Group Theory will be delivered by Professor Mark Sapir during March 4-8, 2013. Professor Sapir is currently a Centennial Professor at Vanderbilt University. He was an invited speaker at ICM-2006 (Madrid) and he has had many visiting positions of which the most notable ones include: IHES, MPI-Bonn, MSRI, and University of Paris-7. In the mini course he will talk about van Kampen diagrams, Burnside problems for groups, identities of groups, diagram groups and growth functions of groups.

The International Workshop in Combinatorial Algebra will be organized by AAC during June 1 – 4, 2013 at Dalhousie University / Saint Mary's University. The aim of this workshop is to discuss the current state of research in several interrelating areas of modern Combinatorial Algebra, with emphasis on the Combinatorics of Commutative Algebras, Groups and Hopf Algebras. The workshop is a satellite event to two special sessions of the 2013 CMS Summer Meeting, which runs from June 4 - 7. These sessions are Commutative Algebra and Combinatorics and Hopf Algebras and Tensor Categories.

Invited speakers of the workshop include Marcello Aguiar (Texas A&M University), Yuri Bahturin (Memorial University), Matej Bresar (University of Ljubljana & Maribor, Slovenia), Giulio Caviglia (Purdue University), Vesselin Drensky (Bulgarian Academy of Sciences), Jurgen Herzog (University of Duisburg-Essen, Germany). As part of the workshop, an AAC Mini Course on Commutative Algebras will be organized with June 4th being entirely dedicated to the mini course. The lecturers are Jurgen Herzog and Giulio Caviglia.

~ Hamid Usefi

Call for Proposals

We encourage mathematicians in Atlantic Canada to suggest programmes or themes for future AARMS activities in the region (workshops, conferences, outreach projects, periods of specialization and exceptional opportunities) and to direct all applications for funding to our Online System. AARMS is open to proposals for large events that take place outside our region if it can be shown that AARMS funding will facilitate the participation of regional personnel (for example by supporting the travel of Atlantic students and postdocs to the event) or will in other ways have a tangible impact on our region.

Proposals are usually expected to show a detailed program with a significant number of confirmed speakers. They must also include a budget table showing projected total revenues and expenses. In general AARMS is not in a position to fund indefinite continuing activities. Successful applicants will be expected to produce a report on their event. The next deadline for submission: May 15, 2013.

AARMS Summer School

The twelfth annual AARMS Summer School will be held at Memorial University from July 15 to August 9, 2013. The summer school is intended for graduate students and promising undergraduate students from all parts of the world. Each participant is expected to register for at least two of the four courses. Each course consists of five ninety-minute lecture sessions each week. These are graduate courses approved by MUN and we will facilitate transfer credit to the extent possible. Tuition and accommodation charges are covered by AARMS. Students need to find their own funds for travel expenses. The courses offered in 2013 will be:

Stochastic Modeling with Applications in Biology
Instructors: Drs. Linda Allen & Edward Allen, Texas Tech University, USA

Reaction-Diffusion Equations and Applications
Instructor: Dr. Stephen Cantrell, University of Miami, USA

Mathematical Methods to Gain Biological Insights
Instructor: Dr. Odo Diekmann, Utrecht University, The Netherlands

Mathematical Modelling in Developmental Biology & Medicine
Instructor: Dr. Philip Maini, University of Oxford, UK

The deadline for applications is 15 March 2013. For more information visit our website, or contact the Summer School Director, Xiaoqiang Zhao (zhao@mun.ca).
www.aarms.math.ca/summer

The Priestman Lectures at UNB

The University of New Brunswick's Faculty of Science hosts the annual Priestman lectures, which are delivered by a distinguished scientist invited by one of its departments. In mathematics, past lecturers have included Roger Penrose and John Conway. The 2012 Lecture was delivered by Dr. Christopher Wild, Professor in the Department of Statistics at the University of Auckland. Dr. Wild is internationally known for his work on methods for data analysis from complex and biased sampling mechanisms, and for his work on statistics education. In a series of three lectures, he discussed how data provides us with new windows that can inform and transform our views and opinions about science and society His public talk was entitled *It's a great story, but is it true?*

CanaDAM 2013
at Memorial University

The 4th biennial Canadian Discrete and Algorithmic Mathematics Conference (CanaDAM) will be held on June 10-13 2013 on the St. John's campus of Memorial University of Newfoundland. Previous CanaDAM Conferences were held at Banff in 2007, Montréal in 2009 and Victoria in 2011.

The general theme of the conference is the theory and application of discrete structures. Its goal is to highlight the most salient trends in the field, which has close links to such diverse areas as cryptography, computer science, large-scale networks and biology. The conference will bring together researchers from the various disciplines with which discrete and algorithmic mathematics interact.

Particular areas of interest are the following: graphs and digraphs, hypergraphs, matroids, ordered sets, designs, coding theory, enumeration, combinatorics of words, discrete optimization, discrete and computational geometry, lattice point enumeration, combinatorial algorithms, computational complexity, and applications of discrete and algorithmic mathematics, including (but not limited to) web graphs, computational biology, telecommunication networks, and information processing.

Participation in the conference through attending, submitting a contributed talk, or proposing a minisymposuim consisting of four or five related talks, is invited. Further details about submitting abstacts and minisymposia can be found by following the Submit a Talk and Submit a Minisymposium links.

Invited Speakers:
Miguel Anjos (École Polytechnique, Montréal)
Anne Condon (University of British Columbia)
Reinhard Diestel (Universität Hamburg)
Cheryl Praeger (The University of Western Australia)
Victor Reiner (University of Minnesota)
Carla Savage (North Carolina State University)
Robert Sedgewick (Princeton University)
Benny Sudakov (University of California Los Angeles)

For more information visit the conference website:
http://canadam.math.ca/2013/

NS Math Circles

NS Math Circles is an outreach program aimed at junior and senior high students. The program vision is to foster enthusiasm for mathematics through interactive, creative, and meaningful presentations. The Math Circles team goes into classes across the province, free of charge, to give engaging presentations on various areas of mathematics. Sometimes the presentations are aimed at curriculum outcomes, other times they go beyond the curriculum to introduce students to new areas of mathematics that they may not normally see in a school setting. We also hold monthly evening events at Dalhousie University for parents, teachers, and students, which consist of a free pizza supper followed by an interactive presentation by a faculty member or graduate student.

In 2009 we received a 4 year grant from the Imperial Oil Foundation, along with support from Dalhousie University, to expand the program from evening events to taking our presentations into high schools province wide. Having received the final instalment of the grant, in September 2013 we will be looking for new sources of funding to continue to keep the program running . Over the past 3 years we have reached out to over 3300 students and this year we are expected to reach out to over 1600 students.

During the school year we not only visit schools, we also hold outreach events, such as the Dalhousie Discover Math Days. During the 3 days of presentations, high schools from across the province come to the Mathematics & Statistics Department at Dalhousie University for a day of fun mathematical activities, lead by the Math Circles team. This year Discover Math Days will be taking place May 14th-16th and on June 5th Math Circles will be hosting an outreach day aimed at the junior high level, which will be taking place at Dalhousie University. On April 27th, we will be visiting the DesBrisay Museum in Bridgewater to give a Math & Art workshop, in conjunction with a high school art show that they are hosting.

If you are interested in attending or hosting a Math Circles event or being involved with the program, please visit our website www.nsmathcircles.com or email us at mathcircles@dal.ca

~ Danielle Cox, Math Circles Program Director

In Memoriam - Rolf Rees

Professor Rolf Rees (Memorial University and earlier at Mount Allison) was one of the important Combinatorists in Canada. He published 85 papers in refereed journals and books and had several well known combinatorists as collaborators; Doug Stinson, Walter Wallis, Don Kreher and others. Dr. Rees made valuable contributions to several areas in combinatorial design theory; mandatory representation designs, resolvable designs, packing and covering designs and others. In 1999 he was the recipient of the Hall Medal in Combinatorics from the Institute of Combinatorics and its Applications. He also was a foundational fellow of the same institute. Rolf passed away on Dec. 10, 2012.

Recent and Upcoming Events

The Mathematical Challenges of Earth-System and Weather Prediction - a public lecture
    Location: Memorial University, St. John's
    Date: March 19, 2013
    Contact Information: Edgar Goodaire

Sustainability of Aquatic Systems Networks
    Organizers: Frithjof Lutscher, James Watmough
    Location: University of New Brunswick, Fredericton
    Date: April 22-26, 2013
    Contact Information: Frithjof Lutscher

Atlantic General Relativity Meeting
    Organizers: Viqar Husain, Sanjeev Seahra
    Location: University of New Brunswick, Fredericton
    Date: April 25-26, 2013
    Contact Information: Viqar Husain

East Coast Combinatorics Conference 2013
    Organizer: Robert Gallant
    Location: Grenfell Campus, Memorial University, St John's
    Date: May 8-10, 2013
    Contact Information: Robert Gallant

Blundon Seminar Math Camp
    Organizer: Margo Kondratieva
    Location: Memorial University, St. John's
    Date: May 15-17, 2013
    Contact Information: Margo Kondratieva

Foundational Methods in Computer Science 2013
    Organizers: Geoffrey Cruttwell, Robert Rosebrugh
    Location: Mount Allison University, Sackville
    Date: May 31 - June 2, 2013
    Contact Information: Geoffrey Cruttwell

International Workshop in Combinatorial Algebra
    Organizers: Y. Bahturin, M. Beattie, S. Faridi, M. Kotchetov, M. Mastnak H. Usefi
    Location: Dalhousie / St. Marys, Halifax
    Date: June 1-6, 2013
    Contact Information: Yuri Bahturin

Analytic Spaces and Their Operators
    Organizers: Jie Xiao, Kehe Zhu
    Location: Memorial University, St. John's
    Date: July 9-12, 2013
    Contact Information: Jie Xiao

2013 AARMS Workshop in Mathematical Biology
    Organizers: Amy Hurford, Xiaoqiang Zhao
    Location: Memorial University, St. John's
    Date: July 27-29, 2013
    Contact Information: Amy Hurford

AARMS is proud to sponsor high-quality activities in Atlantic Canada which significantly enhance research and the training of graduate students.

The science of pure mathematics may claim to be the most original creation of the human spirit.   *~Alfred North Whitehead*