



Dalhousie
University
Inspiring Minds

CHASE REPORT

NEWSLETTER OF THE DEPARTMENT OF MATHEMATICS AND STATISTICS

Faculty of Science

May 2009



CONGRATULATIONS

AWARDS WINNERS

Sir William Young Gold Medal in Mathematics
Peter Crooks

University Medal in Statistics
Victor Bomers

Ralph & Frances Lewis Jeffery Scholarship
Peter Crooks and Tom Potter

Barry Ward Fawcett Memorial Prize
Melanie Tupper

Ken Dunn Memorial Prize
Andrew MacDougall

Katherine M. Buttenshaw Prize
Nathan Singer

Waverly Prize
Miranda McMillan

Emil and Stella Blum Award in Mathematics
Lindsay Cherpak

Ellen McCaughin McFarlane Prize
Adam Alcolado and Kira Scheibelhut

Lorne O. L. Titus Award
Heather Syposz

Department of Mathematics & Statistics Bursary
Joseph Mingrone

**Professor Michael Edelstein Memorial
Graduate Prize**
Neil McKay

PRESIDENT'S AWARDS

Caroline Adlan

Meghan Allen

Andrew Hoefel

Neil McKay

Karyn McLellan

Rob Noble

Angela Siegel

NSERC AWARD WINNERS

PGS-D2 *Andrew Hoefel*

CGS-D3 *Chris Levy*

Emma Connon

CGS-M *Mark Pavlovski*

Peter Crooks

Nathan Singer

USRA

Adam Alcolado (T. Kolokolnikov)

Kira Scheibelhut (K. Taylor)

Peter Crooks (R. Milson)

Mark Pavlovski (K. Johnson and K. Dilcher)

Tom Potter (A. Fraser)

NEW KILLAMS*Tom Potter***GRADUATE STUDENTS****KILLAM RENEWALS***Neil McKay**Andrew Hoefel**Rob Noble**Meghan Allen**Caroline Adlam***HONOURS STUDENTS****Honours - Mathematics***Marc-André Chavy-MacDonald**Peter Crooks**Micaela Das Gupta**Benjamin Evans**David Neil**Mark Pavlovski**Tom Potter**Nathan Singer***Honours - Statistics***Victor Bomers**Joseph Boutilier**Farah Daya**Joseph Mingrone***October 2008 Convocation:****Mathematics***Danielle Cox (MSc)**Alan Hill (PhD)**Matthew Hurshman (MSc)**Margaret-Ellen Messinger (PhD)***Statistics***Scott Wile (MSc)***May 2009 Convocation:****Mathematics***John Rumsey (PhD)**Geoff Cruttwell (PhD)**Rory Wilson (MSc)***Statistics***Yifei Hu (MSc)**Sonja Pritchett (MSc)*

CHAIR'S REPORT

by Dr. Karl Dilcher

As I come to the end of my third year as Department Chair, I can only repeat the sentiment expressed by my predecessor Pat Keast who wrote in his last Chair's Report, "Time flies when you're having fun". It has been another interesting year, often challenging, to be sure, but always a pleasure to come to work.

Without doubt the biggest change over the past year was the renovation of the space previously occupied by the Department Library, and the opening of the space as our new Student Resource Centre. The new name of this space reflects the fact that it is more than just a learning centre, although this does remain its primary purpose. The multi-purpose nature of this new space became clear even before it was finished when it was actually used as a wedding chapel, as will be reported elsewhere in these pages. Since its official opening in late January, 2009, this wonderful space has also been used as movie theatre, a venue for a book launch plus rock and jazz concert, and now as the new home for our Awards Day ceremony.

Another highlight this past year was the awarding of a major grant by the Imperial Oil Foundation to a project that will take the successful Math Circles to the entire Province. The success of the grant application was due to a very well thought-out project developed by Richard Nowakowski, Dorette Pronk and Angela Siegel in collaboration with staff from the Office of External Relations. Angela Siegel will be the project coordinator, first on a part-time basis, and then full-time from early 2010 on.

These two major items will also be mentioned elsewhere in these pages, as will be numerous other matters, some of great importance (such as matters of tenure, promotion, and research awards), and others included just because they made a good story, at least in my opinion.

There are also some changes to the office to report. Jackie Grandy, who served as our receptionist for about 10 years, took up a full-time position with a department in the Faculty of Medicine. We had a small fare-well party for Jackie on April 23 in the office. I thank her for her years of service, and wish her all the best in her new position.

On July 1, Richard Nowakowski will be taking over as Acting Chair for 6 months while I'm on sabbatical leave. During that time the self-study document for our upcoming Senate Unit Review will have to be put together; I thank Richard for taking on this huge job. In January, 2010, I will return for another 3 ½ years as Chair.

I wish everybody a pleasant and successful Summer. Enjoy reading this new issue of the Chase Report.

REPORT FROM THE MATHEMATICS DIVISION

by Dr. Jason Brown

This year there were two major developments regarding the undergraduate curriculum. First, the division put forward a new double major program in science and mathematics, with mathematics as the second subject. The impetus for this program was a desire to create a more suitable double major for biology/mathematics, but it was quickly seen that a more general version of the proposed conjecture was warranted! The new program gives an explicit list of relevant applied mathematics courses in order to provide further guidance to science students. The program appears in the new calendar.

The second new program is for a concurrent degree with Engineering Science with a concentration in mathematics. The regulations now explicitly recognize the equivalence of certain engineering mathematics courses to our calculus and linear algebra courses, and requires both a proof-based course and math modeling or numerical computing course. Again, the program has been accepted and appears on the books.

We have also overhauled the first differential equations course, which for many years has been MATH 3110. It was felt that the material for the course would be better suited as a second year mathematics course, rather than a third year level course, and would bring Dalhousie more in line with other institutions, where a course in ODEs (ordinary differential equations) is most often introduced in the second year. Many thanks to Roman Smirnov for spearheading this change.

There was a meeting between Mathematics and

Chemistry to address some possible changes to the upper-year mathematics requirements for the honours and major programs in chemistry. The 100% compliance of individuals in the division to provide curriculum outlines for the fall courses proved invaluable as this formed a basis for fruitful discussions between the two departments.

We bid Bob Paré adieu as he retires; we will categorically miss him (though we still expect to see him around the department). We also acknowledge the retirement of Elizabeth Cameron, and wish her well in her future endeavours.

After taking over from Jeannette Janssen as director, I would like to thank her for her support and advice in the transition, and I extend a thank you to all other members in the department for their assistance in a variety of issues, not least of the all the setting next year's teaching schedule, a combinatorial problem made more intractable by the number of sabbatical and leaves for the upcoming year. Thank you everyone.

THE STATISTICS DIVISION

by Dr. David Hamilton

This year the Statistics Division has welcomed three visitors, who have contributed greatly to the intellectual life of the group. Grace Chiu, from the University of Waterloo was here for much of the fall working on problems in environmental statistics with Mike Dowd and Joanna Flemming. Julie Horrocks from the University of Guelph, a former graduate of the department, is spending her sabbatical year with us. She has been working on the estimation of whale abundance using acoustic surveys, with Hal Whitehead (Biology) and David Hamilton, and has taught courses in both terms. Ammar Sarhan, from Mansoura University, Egypt, has also been visiting this year. He has taught courses for us and is working with Bruce Smith and David Hamilton in problems related to reliability.

Hong Gu and George Gabor have been on sabbatical this year. Hong spent some time in China, and continues to explore possibilities (with Keith Taylor, Acting Associate Vice-President Academic Outreach and International Programs) for bringing Chinese students to Dalhousie to study Statistics in their third

and fourth years. There is a very good chance that as many as twenty such students will join us in the fall of 2010.

On February 17 the Department celebrated its first annual Sir Ronald Fisher tea party, on the 109th anniversary of his birth. Fisher is frequently called the father of Statistics. In his famous book on experimental design (1935), Fisher discussed how to properly design an experiment to determine whether a lady could tell whether milk was added to a cup before or after tea. Fisher is also known for the design of agricultural trials, and for this reason we served cake decorated in the pattern of a latin square.

Graduate Students

Congratulations to the following undergraduates graduating at the May, 2009 convocation.

Liudong Chen - B.Sc. Major in Statistics (15 credit)
 Joey Mingrone - B.Sc. Combined Honours in Biology and Statistics
 Victor Bomers - B.Sc. Combined Honours in Statistics and Contemporary Studies
 Joseph Boutlier- B.Sc. Combined Honours in Chemistry and Statistics
 Farah Daya - B.Sc. Combined Honours in Statistics and Economics

AWARDS DAY SPEAKER

This year's Awards Day Speaker is **Dr. Wesley Yung** of Statistics Canada in Ottawa. Dr. Yung graduated from this department in 1987 with an honours B.Sc. in Statistics, and in 1988 he received his M.Sc. in Statistics here, under the supervision of David Hamilton. In the same year he joined Statistics Canada as a Survey Methodologist. A few years later he took an educational leave, and finished his Ph.D. in Statistics at Carleton University in 1996. While doing his Ph.D. he also worked as a teaching assistant and sessional lecturer at Carleton.

After his Ph.D. Dr. Yung was promoted to Senior Methodologist, and then in 2001 to Section Chief, first in the Distributive Trades and Transportation Section, and later in the Industry, Finance and Investment Section. Since 2006 Dr. Yung has been an Assistant

Director. He is also the author or co-author of numerous scientific papers. - *kd*

DISTINGUISHED SPEAKER SERIES

This year's Distinguished Speaker was **Dr. Peter Nicholson**, the President and CEO of the Council of Canadian Academies, and Dalhousie alumnus. The title of the public lecture was "Math for the Masses. Why Quantitative Literacy Matters", and it took place on May 14th.

The lecture highlighted how the digital age is changing the face of education. Access to technology and massive amounts of data empowers and challenges us as a society. The skills needed to wade through this information, and make sense of complex problems, must become a priority. Dr. Nicholson answered the question of how education must change to make sure we meet the challenge.

Peter J.M. Nicholson became the inaugural president of the Council of Canadian Academies in February, 2006. He holds B.Sc. and M.Sc. degrees in Physics from Dalhousie University and a Ph.D. in Operations Research from Stanford University. Before assuming his current position, he was Deputy Chief of Staff, Policy in the office of Prime Minister of Canada. He served in a number of public service positions including as a member of Nova Scotia Legislature, Clifford Clark Visiting Economist in Finance Canada, and as a Special Advisor to the OECD in Paris. Dr. Nicholson's business career has included senior executive positions with Scotiabank and BCE Inc. He taught computer science at the University of Minnesota for four years. He was the founding Chair of the Board of the Fields Institute and was the founding Chair of the Members of the Canada Foundation for Innovation as well as of the Millenium Scholarships. Dr. Nicholson is a Member of the Order of Canada.

This year's Distinguished Speaker's visit, and all the publicity surrounding it, was once again organized by Dr. R.P. Gupta. - *kd*

RETIREMENTS

After decades of service to the Department of Mathematics and Statistics and to Dalhousie University, two colleagues will be officially retiring as of June 30, 2009.

Elizabeth Cameron was born in Reading, England, where she attended Grammar School. She graduated with an Honours Degree and an M.A. in mathematics from St. Hilda's College, Oxford, and then received a post-graduate Certificate in Education from the London Institute of Education. Already before going to Oxford she taught for almost a year in Nigeria, and later she taught for several years in Ghana, and then at different schools in England and in Northern Ireland.

In 1976 Elizabeth moved to Halifax with her family, and until 1988 she taught part-time, and for several years also full-time, at St. Mary's and Mount Saint Vincent Universities. In 1981 she first taught in this department on a part-time basis, until in 1987 she was appointed to a permanent 50% lecturer position. In 1992 Elizabeth was granted tenure, and in 2006 her position was reclassified to Senior Instructor.

Elizabeth taught mainly first-year calculus in its various flavours: Mostly 1000/1010, but also 1000X/Y, mathematics for commerce students, and most recently calculus for the DISP program. She also coordinated 1000/1010 at various times, was Acting Director of the Learning Centre for a while, and has served as an advisor on the Faculty level. Altogether Elizabeth probably taught more students over her career than anyone else in this department. We shall miss her long experience and the tremendous and exemplary care she took with every aspect of her profession.

After 40 years as a member of this department, **Dr. Robert (Bob) Paré** will also be retiring on June 30, 2009, thus missing the abolition of mandatory retirement by just one day. Bob was born in Québec City, and received his B.Sc. at Laval University in 1966. After finishing his M.Sc. and Ph.D. degrees at McGill, he came to Dalhousie in 1969, to join as a postdoctoral fellow the very vibrant Category Theory group then led by Bill Lawvere.

After two years as a postdoc, Bob was appointed Assistant Professor, and he quickly rose through the ranks; he has now been Full Professor for 25 years. He soon became a leader in the field himself, and he supervised four M.Sc. and six Ph.D. students, among them our colleague Richard Wood and Robert Rosebrugh of Mount Allison. Under Bob's and Richard's leadership, Category Theory has remained a strong research area at Dalhousie, and one of the recognized centres in the World for research in the field.

Bob will remain an active member of this department, and we will continue to benefit from his wisdom, his legendary sense of humour, and his contributions to the research profile of our department.

On Tuesday, June 9, beginning at 2:30 p.m. there will be a *retirement party* in the Pub of the Dalhousie University Club. The Department is invited, and so are all others who have known Elizabeth or Bob. -*kd*

JONATHAN BORWEIN RESIGNS

There is also a resignation to report: **Dr. Jonathan Borwein** of the Faculty of Computer Science, who has held a cross-appointment with this department, has resigned from his Dalhousie position, effective June 30th, 2009.

Jon's affiliation with our department goes back almost 35 years. He first came to Dalhousie in 1974 as a postdoctoral fellow, and was soon appointed Assistant Professor. With the exception of 2 years (1980-82) at Carnegie-Mellon University, he stayed at Dalhousie until 1991, having reached the rank of Full Professor already in 1984. From 1991 to 1993 Jon was at the University of Waterloo, while on leave from Dalhousie, and from 1993 to 2004 he held named professorships at Simon Fraser University. Since January, 2004, he held the position of Research Professor in C.S. here at Dalhousie. Since January, 2008, Jon has been on leave at the University of Newcastle, Australia, where he will remain after his resignation from Dalhousie.

Jon received numerous honours, prizes, and awards during his career so far, including his appointment as FRSC in 1994 and an honorary doctorate in 1999. He also served, and continues to serve, on numerous

national and international committees. From 2001 to 2003 he was Canada Research Chair in Information Technology at SFU, and from 2004 to 2009 Canada Research Chair in Collaborative Technology at Dalhousie.

Jon Borwein will continue to be affiliated with our department through an Adjunct Professorship. We wish him all the best in Newcastle. -*kd*

POSTDOCTORAL FELLOWS

Dr. Johan Brannlund received his Ph.D. at Stockholm University in 2003, after which he was a postdoctoral fellow at UBC. He came to Dalhousie in November, 2006, and has been working since then with Dr. Alan Coley.

Dr. O-Yeat Chan received his Ph.D. at the University of Illinois in 2006, just before coming to Dalhousie. His fields of interest are classical, additive, and computational number theory, and he has worked with Drs. Jonathan Borwein and Karl Dilcher. For the past two years Dr. Chan has been an NSERC postdoctoral fellow. In July he will join Jon Borwein in Newcastle, Australia, for another one-year postdoctoral fellowship.

Dr. Georgios Papadopoulos joined us as Killam Postdoctoral Fellow in August of 2007. He received his Ph.D. at the University of Athens in 2005 and was a postdoctoral fellow there until he came to Dalhousie. His field of interest is general relativity, and in particular mathematical and quantum cosmology. He has been working with Dr. Alan Coley, and will return to Athens later this Summer.

Dr. Nicos Pelavas received his Ph.D. at Queen's University in 2002, and he was in this department from the Fall of that year until December, 2008, as a postdoctoral fellow and instructor of numerous courses. His fields of interest are general relativity and cosmology, and he worked with Dr. Alan Coley. Since January, 2009, Nicos has been a full-time researcher with DRDC Atlantic.

Dr. Pawel Pralat received his Ph.D. at Adam Mickiewicz University in Poznań, Poland, in 2004, after which he was a postdoctoral fellow at the University of Waterloo and Wilfrid Laurier University.

Since September, 2006, he has been a PDF in this department, partly funded through MITACS. His research area is modelling and mining of network information systems, and he has been working with Dr. Jeannette Janssen. Paweł recently received a tenure-track position at West Virginia University in Morgantown. He will move there later this Summer with his family.

Dr. Huaichun Wang, who has been at Dalhousie since December, 2004, received his Ph.D. in Biology at the University of Ottawa in 2005. His research interests include Molecular Evolution and Bioinformatics, and he has worked with Dr. Ed Susko and Dr. Andrew Roger of the Department of Biochemistry and Molecular Biology on statistical modelling of protein sequence evolution. Dr. Wang may remain at Dalhousie for another year.

VISITORS

This past year several faculty members from other universities visited our department for extended periods of time.

Dr. Grace Chiu of the University of Waterloo visited the department for most of the Fall term as Mike Dowd's guest. **Dr. Julie Horrocks** of the University of Guelph has spent the whole academic year with us and also taught a statistics course each term. She will remain in Halifax until later this Summer. **Dr. Megan McClure** spent July to October, 2008, with us as Alan Coley's guest. **Dr. Ammar Sarhan** of Mansoura University in Egypt has been with us since last August, and he taught a course last Fall, and is again teaching this Summer. He will be with us for at least another year.

We thank all visitors for contributing to the department's teaching and research efforts, and for taking part in the department's life. *-kd*

THE CHASE FAMILY

As I reported in previous years, department members have tied the knot and multiplied in a statistically significant manner. In fact, for 2006/07, there were 6 weddings and two babies to report, and in 2007/08 it was one wedding and 4 babies. The trend continues, and I am happy to report the following family events:

On August 16, 2009, **Hong Gu** and **Toby Kenny** got married in the Chase Building; see the more detailed report later.

A baby girl, Tesfa Catherine Cruttwell, was born to **Meghan Allen** and **Geoff Cruttwell** on October 5, 2008.

A baby girl, Leila Michelle Faridi, was born to **Sara Faridi** and **Peter Selinger** on December 26, 2008. Leila's sister Sophie will turn two late in May.

A baby boy, Samuel Fleming, was born to **Joanna Mills Flemming** and her husband on April 8, 2009. Little Sam is brother to Jenna (age 5) and Ben (2).

A baby girl, Penelope Autumn Levy, was born to **Chris Levy** and his wife Joanna on April 17, 2009.

On June 6, 2009, **Vaneeta Grover** will get married in Edmonton, Alberta, to her fiancé Himangshu.

Best wishes to all! *-kd*

THE BOBFEST

The ATCAT Seminar, which traditionally has taken place on Tuesdays, is without doubt the longest-running continuous seminar at Dalhousie, if not in Atlantic Canada (or beyond).

To celebrate Bob Paré's 40 years at Dalhousie, there will be a special extended session of ATCAT, called BOBCAT, on Tuesday, June 9th. One-hour talks will be given by Bill Lawvere of the University of Buffalo and Michael Makkai of McGill. Other speakers are Francisco Marmolejo, one of Bob's past Ph.D. students, and Jeff Egger, a more recent postdoctoral fellow. There will also be shorter tributes and a joint lunch. The event will end with a retirement party, starting at 2:30 p.m. in the Pub of the Dalhousie University Club. *-kd*

HONOURS, TENURE, AND PROMOTIONS

Joe Bielawski (joint appointment with Biology) was awarded the 2008/09 Faculty of Science Killam Prize.

David Iron has been promoted to Associate Professor, with tenure, effective July 1, 2009.

Theodore Kolokolnikov has been reappointed in his tenure-track position, also effective July 1, 2009.

Congratulations to Joe, David, and Theodore on these important achievements and recognitions. *-kd*

A FULL-SERVICE DEPARTMENT

Already two years ago I wrote an item under this title, and I asked which department could boast its own licensed wedding officier? The reader will already have noticed above that another wedding this past year was officiated by **Dr. S. Swaminathan**, known as Swami to all. Swami is a valued member of the local Indian and Hindu communities and serves as Priest in the Hindu Temple on Cork Street. He is also a Dalhousie Chaplain, and is much in demand throughout the province for performing weddings; everybody who knows Swami will know why.

On Saturday, August 16th, Swami officiated at the wedding of our Statistics colleague **Dr. Hong Gu** and Mathematics postdoctoral fellow **Dr. Toby Kenney**. Originally the wedding was supposed to take place in Point Pleasant Park, with the Chase Building as alternate venue in case of rain. Well, it did rain, and so the space that was to become our new Student Resource Centre had a wedding as its first official function. The timing was ideal: The room had just been painted, and the new floor had just dried. Otherwise the room was empty, but it was tastefully decorated by Gretchen for the occasion.

The wedding was well attended by department members and friends of the couple. **Dr. Chris Field** “gave away” the bride, but after her sabbatical he will certainly get her back as a colleague and co-author. The Department Chair unfortunately had to miss this joyful occasion, but he is happy not only for the couple, but also for seeing the two Divisions having come closer together. We wish Hong and Toby all the best. *-kd*

THE CHASE TURNED 78

Not rounds per minutes, of course, although there are some days in the “Oval Office” when it feels that way.

No, but on January 14, 2009, our good old Chase Building had its 15 seconds of fame when in CBC TV's “Nova Scotia at Six” it was reported that on that day in 1931 the building was opened as the N.S. Public Archives. A very nice archival picture was shown, and it was duly mentioned that the building is now the home of the Dalhousie Department of Mathematics and Statistics. *-kd*

MATHEMATICAL MARATHON MEN

Two years ago I reported under the same heading that two sons of department members took part in the Boston Marathon, namely Liam Keast of Bedford and Alan Thompson of Vancouver.

Well, they did it again! Even better, both were winners. While Alan (3:28:24, rank 6771) was still faster than Liam (3:29:09, rank 7020), Liam improved by a full 13 minutes, compared with Alan's also impressive improvement of 5 minutes over 2 years ago.

It should also be mentioned that Rami Bardeesy (2:28:57, rank 42), a Dalhousie alumnus (Biology; he took also Math & Stats courses), remains second-fastest Canadian. Congratulations to Alan, Liam, and Rami on their successes. *-kd*

CHAIRS FOR SALE

It comes with the title that a department chair is the butt (so to say) of jokes that make use of the ambiguity of the word “chair”. But recently the e-mail alias “chair@mathstat.dal.ca” apparently confused a poor furniture dealer. On April 19th, 2009, I received the following e-mail:

Good Day
Am Mr. Prince David do you carry chairs what is their price range as well as the types of credit card you accept for payment.

I forwarded this to the Acting Dean, figuring that this could solve some of her problems, including the Faculty's finances. She replied that, yes, they come in all sizes and shapes. *-kd*

HIGHFLYERS

Right at the beginning of the Winter term it was noticed that an unidentified frying object had found its way to the very high ceiling of our 2nd floor lounge, where it had landed in the middle of a greasy circle.

A contest was then launched to guess the most likely nature of the object, and how it got there. While the grand prize, the object itself, was never claimed, it now seems likely that it was a piece of a hotdog, with mustard as adhesive. It appears that some people can't keep their food down. *-kd*



David Langstroth and Jason Brown as “Proof!”

THE STUDENT RESOURCE CENTRE

“The Comfort Quotient” was the title of an article in DalNews just before the official opening, on January 26, 2009, of our new Student Resource Centre. Everybody who remembers the old Learning Centre in the basement will appreciate the enormous difference. The new space is bright, pleasant, and comfortable, and the art work displayed gives it a special touch. There

are several large pieces of modern art in the “wings” of the room, on loan from the Dalhousie Art Gallery. The mathematical art, covering the sound panels in the front part of the room, was designed by Eva Knoll, a member of the Faculty of Education at Mount St. Vincent University.

The opening ceremony drew a large crowd of faculty, students, and members of neighbouring departments. Speakers at the event were President Traves, Bonnie Neuman (VP Student Services), Mark Pavlovski (Undergraduate Student Society), Marty Leonard (Acting Dean of Science), and Keith Taylor, our colleague and Associate VP for Outreach and International Affairs. Eva Knoll also said a few words about her art. (Later in the term she gave a one-hour colloquium talk about the underlying mathematics).

A special attraction was a musical performance by “Proof!”, a duo consisting of Jason Brown (guitar and vocals) and David Langstroth (Bass). More details about the event, along with photos, can be found at <http://www.mathstat.dal.ca/allnews.html>

The original impetus for this new Student Resource Centre came from Keith Taylor when he was Dean of Science. Since we possibly had the nicest mathematics library in the country, we did not wish to give it up lightly, and the decision for switching spaces was made only after careful consideration and full consultation with everybody. Late in 2007 a planning committee was put together, chaired by Jason Brown. By the Spring of 2008 the financing had been secured: A major contribution from the Alteration and Renovation budget took care of the new floor, paint, new windows, and the moving expenses, while a generous donation from Mrs. Alberta and Dr. Graeme Boswall made the Student Centre the pleasant space it now is.

The actual renovation and move of the library took place between mid-June and late August of 2008, and the room slowly converged towards its final stage during the Fall term of 2008, while it was already being used as Learning Centre.

Gretchen Smith was heavily involved in all stages of planning and the actual renovation, looking with great care after every single detail. Among other invaluable contributions it was her idea to commission the mathematical art for the originally very bland sound

panels. As the Chair said during the opening ceremony, "This is Gretchen's Room!" -kd

THE DEPARTMENTAL LIBRARY

As a consequence of the move of the Learning Centre upstairs to our new Student Resource Centre, the Departmental Library (The Agnes Baxter Reading Room) had to move downstairs. The move happened over three days last Summer; it had to be carefully planned beforehand and executed very swiftly because it all had to happen in step with the carpenters who took down, and built up again, the metal shelf units. We had to move about 650 shelves worth of journals, each shelf about 3 feet long. Thanks to the volunteer help of several department members (graduate students, staff, and faculty), some of whom worked very hard, everything went very smoothly. In the end, the new library turned out to be more pleasant than we had expected.

Since the new space is considerably smaller than the upstairs room, we had to put some library material (such as the print versions of Math Reviews and Zentralblatt) into off-campus storage, while other journals (especially in the field of Operations Research) were transferred to the Sexton Library or, in the case of duplicates, were also put in storage.

For the last few years Geoff Cruttwell looked after the day-do-day operation of the library, both in the old and in the new location. He did a great job, but with his upcoming graduation he will move on. Danielle Cox has agreed to take over from Geoff. Rob Milson remains the Department Library Representative, and deals with matters such as requests for book acquisitions. Thanks to all of them, and to Swami who continues to send out the weekly "New Books" mailings, with the biographical/historical sketches.

As always, there are hundreds of books for sale, most of them donated by retired colleagues. A catalogue can be found at <http://www.mathstat.dal.ca/~dilcher/oldbooks.html> Over 100 new (old) books will soon be added to the catalogue. -kd



OUR DAYS ARE NUMBERED

This is the delightfully ambiguous title of **Dr. Jason Brown's** new book which was recently published with McClelland & Stewart, one of Canada's major publishing houses. The book's subtitle, "How Mathematics Orders Our Lives", then tells a bit more about the contents of the book which is aimed at the general public. In fact, much of the book focuses on how people can use mathematics to make decisions.

After Jason had already travelled to Toronto and Ottawa to promote his book, a major book launch took place on May 4th in our new Student Resource Centre, attended by well over 100 guests. One of the attractions of the event was a live performance by Jason, who is also a talented guitarist, joined by a second guitarist and vocalist, a bassist, and a drummer. Further details can be found at <http://dalnews.dal.ca/2009/05/04/numbered.html> Jason also appeared in various local media, both here in Halifax and in Toronto.

Earlier in the academic year, Jason's mathematical "detective work" on the Beatles tune "A Hard Day's Night" had attracted considerable attention in the media, culminating in an article in the Wall Street Journal on Jan. 30th, 2009. A link to the article can be found on the department's website under "View all news", or go directly to <http://www.mathstat.dal.ca/allnews.html>. Congratulations to Jason on these achievements. -kd

STATISTICS CONSULTING

by David Hamilton

The Statistical Consulting Service has been provided advice to researchers on and off campus since 1974. Last year our part-time consultant was Chris Jones, an MSc Statistics graduate of our department. Among the year's highlights was a short course in statistical methods offered to a local group of chemists. Chris prepared lectures tailored to the needs of the group, and by all reports his efforts were very well received. In addition Chris worked on a project for the Navy. The objective was to identify features in RADARSAT images that are due to temperature fronts associated with the Gulf Stream without reference to sea surface temperature data. Model-assimilated data was used to identify the location of persistent frontal features associated with the Gulf Stream, which is expressed as an envelope defining the bounds of the location of the Gulf Stream. Data is now being collected to build a logistic regression model wherein measures of a RADARSAT feature that falls within the envelope will be used to estimate the probability that the feature is a signature of the Gulf Stream. This spring Chris has accepted full time employment in the Department of Oceanography, and consulting duties were taken over by Sam Stewart, ASTAT, who obtained his undergraduate degree at Dalhousie and his MMath at the University of Waterloo.

FORTY YEARS AND COUNTING

... and not only counting. Nobody knows this Department, and indeed the workings of the University, better than **Gretchen Smith**. It would be very difficult to list all she has done for the Department, and for our students, visitors, staff, and faculty; so I won't even try. Instead I'll quote what the late Professor Arnold Tingley wrote in his extensive 1990 History of this department:

“Miss Gretchen Smith joined the Department on June 2, 1969, replacing Irene Pittson. She came as a result of a suggestion of Mrs. Marginson. I recall that when I interviewed her she indicated that Mrs. Marginson had convinced her that this would be a good place to work. She proved to be competent and extremely reliable, and in 1989 still serves, now as Administrative Assistant. Without much doubt successive Chairmen have relied

on her more and more heavily, and she probably knows more about the operation of the Department than anyone else.”

So this June 2nd, Gretchen, who has now been Department Administrator for many years, will have her 40th anniversary with our Department. Happy Anniversary, Gretchen! *-kd*

GRADUATE STUDENT SOCIETY

by Matt Hurshman

The Dalhousie Mathematics and Statistics Graduate Society has wrapped up another successful year. The main focus of the society is to organize social events for the graduate students and the entire department.

Our first event was a semi formal martini party hosted by Catriona Campbell. The event was well attended and served as an excellent venue for new graduate students to meet other students from the department. The next event was the Halloween party that was put on by the Dalhousie Undergraduate Mathematics and Statistics Society. Many graduate students were in attendance and a great time was had by all. The first event for the winter semester was a smashing bowling trip. The next event was the annual Pi Day Pie Eating. The event resulted in many raised eyebrows around Halifax as graduate students Matt Hurshman and Andrew Hoefel stormed around grocery stores and bakeries demanding all pies in stock. Their efforts were much appreciated as the pies were enjoyed by students and professors alike.

For the past few years the Graduate Society and the Undergraduate Society have collaborated to give end of term tutorials for Math 1000, Math 1010 and Stat 1060 to help students study for their final exams. These tutorials serve as a main fundraiser for both societies. We thank the undergrads for their hard work in organizing these tutorials and the graduate students who volunteered their time to conduct these tutorials.

On behalf of the Graduate Society I would like to thank our members for another great year and wish everyone a happy and productive summer.

Matt Hurshman (President)
Andrew Hoefel (Vice President)

Melanie Abeysundera (Treasurer)
 Catriona Campbell (Departmental Liaison)
 Neil McKay (DAGS Representative)
 Danielle Cox (Computer Resources Representative)

GRADUATE STUDENT SEMINAR

by Matt Hurshman

David Iron, *Pattern formation in reaction-diffusion system*, Tuesday, September 23.

Bob Paré, *Mathematics through the Categoryscope*, Tuesday, November 18.

Jason Brown, *Music and Mathematics*, Tuesday, November 25.

Alan Coley, *Spacetimes and scalar polynomial curvature invariants*, Tuesday, November 25.

Adam Clay, *An introduction to orderable groups*, Tuesday, January 20.

GRADUATE REPORT – STATISTICS

by Dr. E. Susko

This year we welcomed two new MSc students into our graduate program, Sylvia Churcher and Lihui Liu. Currently we have five continuing MSc and five PhD students in statistics. We have admitted seven new graduate students for 2009/2010. Two MSc students have completed programme requirements since the last Chase Report:

Yifei Hu (Dr. Susko)
 Sonja Pritchett (Dr. Hamilton)

GRADUATE REPORT – MATHEMATICS

by Dr. R.J. Nowakowski

Theses defended

MSc: *Danielle Cox* (Adv: J. I. Brown);
Matt Hurshman, Rory Wilson (Adv: J. Janssen).

PhD:
Geoff Crutwell (Adv: R. J. Wood, External Examiner

R. Cockett, Calgary), 2009-2011, Postdoctoral position, University of Calgary.

Alan Hill, (Adv: R. J. Nowakowski, External Examiner G. Hahn, Montreal), National Defence.

Margaret-Ellen Messinger (Adv: R. J. Nowakowski, External Examiner G. MacGillivray, Victoria), 2008-2009, Faculty position, University of Montana.

John Rumsey (Adv: D. Iron), Faculty, Dalhousie University.

Conferences Attended

Commutative Algebra: Connections with Algebraic Topology and Representation Theory, University of Nebraska–Lincoln, 18–22 May 2008; *Andrew Hoefel*

Second Canada-France Conference in Montreal, June 1 - June 6, 2008; *Rebecca White* (presented)

Summer Workshop: MITACS/MASCOS Joint Workshop on Fusion, Mining and Security for Networks, Montréal, Canada June 16, 2008 - June 27, 2008; *Matt Hurshmann* (presented), *Rory Wilson* (presented).

International Category Theory Meeting, CT08, Calais, France, 2008 June 22-28; *Geoff Crutwell* (presented)
 Macaulay 2 Workshop, Snowbird Utah, June 28 – July 3, 2008; *Andrew Hoefel* (presented)

Asymptotic analysis of localized patterns in PDEs (Canadian Industrial and Applied Mathematics Society meeting) July 2008; *Rebecca White* (presented).

10th Meeting of the Canadian Number Theory Association, July 13 - 18, University of Waterloo; *Rob Noble*.

Connecting Women in Mathematics Across Canada Workshop, December 4-5 2008, University of Ottawa; *Danielle Cox* (presented), *Karyn McLellan* (presented).

Combinatorial Algebra meets Algebraic Combinatorics, Sixth Annual Meeting, Memorial University, January 16 - 18, 2009; *Andrew Hoefel*.

19th West Coast Combinatorics Conference,

Feb 21-22, University of Victoria, *Paul Ottaway*, presented.

East Coast Combinatorics Conference April 29-30, 2009; *Danielle Cox* (presented), *Matt Hurshman*, *Neil McKay*, *Angela Seigel* (presented), *Rory Wilson*.

Honours and Awards

New NSERC Awards: *Emma Connon* (CGS-D), *Andrew Hoefel* (PSG-D) and *Chris Levy* (CGS-D).

Killam renewals: *Caroline Adlam*, *Meghan Allen*, *Andrew Hoefel*, *Rob Noble*, *Neil McKay*.

Research Articles accepted or appeared

Caroline Adlam (with R. McLenaghan, R. Smirnov) On geometric properties of joint invariants of Killing tensors. Symmetries and overdetermined systems of partial differential equations, 205–221, IMA Vol. Math. Appl., 144, Springer, New York, 2008.

Meghan Allen, Peeking at Partizan Misere Quotients, to appear in *Games of No Chance IV*.

Danielle Cox, (with J.I. Brown), The closure of the set of roots of strongly connected reliability polynomials is the entire complex plane, to appear in *Journal of Discrete Mathematics*.

Neil McKay, *Angela Seigel* (with R. J. Nowakowski) Navigating the MAZE, to appear in *Games of No Chance IV*.

M. E. Messinger (with R. J. Nowakowski) The Robot Cleans Up, to appear *Journal of Combinatorial Optimization* (extended abstract in Lecture Notes in Computer Science Proceedings of COCOA 2008).

M. E. Messinger (with S. Gaspers***, R. J. Nowakowski, P. Pralat**) Clean the graph before you draw it!, *Information Processing Letters* 109(2009) 463–467.

M. E. Messinger (with N. E. Clarke*, S. Finbow*, S.L. Fitzpatrick*, R.J. Nowakowski) See page in directed acyclic graphs, to appear in *Australian J. Combinatorics*.

John Rumsey (with David Iron, Theodore Kolokolnikov, Juncheng Wei) Stability of Curved Interfaces in the Perturbed Two-Dimensional Allen--Cahn System. *SIAM Journal of Applied Mathematics* 69(5): 1228-1243 (2009).

*B. Valiron**** (with P. Selinger) Quantum lambda calculus. Book chapter. To appear in *Semantic Techniques in Quantum Computation*, Cambridge University Press, 2009.

*B. Valiron**** (with P. Selinger) A linear-non-linear model for a computational call-by-value lambda calculus. Extended abstract. In *Proceedings of the Eleventh International Conference on Foundations of Software Science and Computation Structures* (FOSSACS 2008), Budapest.} Springer LNCS 4962, pp. 81-96, 2008.

 *= Alumni,** = PostDoctoral Fellow;
 ***= visiting PhD student

HONOURS SEMINARS

September 2008

- Hot spots in the inhomogeneous microwave heating model, A. Alcolado

October 2008

- The stereographic projection, R. Milson
 - Gone fishing, D. Iron
 - A polynomial giving the prime numbers as its positive values R. Paré
 - Much ado about nothing: Zeros of polynomials, K. Dilcher

November, 2008

- Going around in circles beyond Klein's imagination, D. Pronk
 - Google's PageRank algorithm, T. Kolokolnikov
 - Magic Squares and Points of Inflection on Elliptic Curves, S. Swaminathan
 - Chips and sandpiles, J. Janssen

January, 2009

- Averaging and observational cosmology, A. Coley
 - Acts of Creation: The Mathematics of Replication,

Keith Taylor

February, 2009

- The Hopf Fibration R. Milson
- On Heron's formula T. Thompson
- The Quadratic Sieve Factoring Algorithm, O-Yeat Chan

March, 2009

- Slide Rules, Simple and Complex, Robert Dawson
- Coupled Oscillator Systems, David Neil
- Grassmannians and Enumerative Geometry, Peter Crooks
- Tempered Distributions and the Hilbert Transform, Tom Potter
- Mathematical Modeling of Epidemics, Mark Pavlovski

April, 2009

- A Topological Lower Bound on The Chromatic Number of a Graph, Nathan Singer

NOVA SCOTIA MATH LEAGUE MATH OUTREACH

by Dr. R.J. Nowakowski

Math Circles is an event run about six times per year for local High School students and Teachers. A typical event starts with a 30 minute mini-lecture followed by 'pizza' and then a one-to-two hour lecture. The lectures are meant to have lots of audience participation. Handouts and notes are made available for teachers and students. A proposal, spearheaded by Linda Crockett (Development Office), Richard Nowakowski, Dorette Pronk and Angela Siegel, was developed and submitted to the Imperial Oil Foundation. Thanks should also go to Jason Brown, Karl Dilcher, Keith Taylor and especially to Elizabeth Thompson (Development Office) for helping with the document. The aim is to increase the participation rate of high school students in sciences and mathematics in particular.

The proposal is to 'take the show on the road' by:

- 1) developing 12 (or more) lectures/activities complete with lesson plans and ancillary materials; and

- 2) presenting these at High Schools across Nova Scotia.

We already have a team of High School teachers in place to vet and guide the subject matter, lectures/activities, and other materials.

Late in February, the Imperial Oil Foundation decided to fund the project with \$100,000 each year for four years. The project will be time intensive. To ease the burden on the Department, part of this money will go to hiring a Coordinator to run the project, and part to hire a Post Doctoral Fellow so that the research of Dorette Pronk (the main presenter) will not be severely affected. The Department has offered the use of an office to give the Project a physical incarnation. The official announcement will take place at the Math Circles event, June 1, Student Resource Center, Chase Building at 5pm. The main event will be 'Mathematics and Music' presented by Jason Brown backed by a live band!

DALHOUSIE UNDERGRADUATE MATH AND STATS SOCIETY (AKA DUMASS)

by Mark Pavlovski

DUMASS President 2008-2009

This past year was a very eventful one for the DUMASS. We planned a multitude of events (many of which actually happened!), funded weekly Wednesday honours seminars with 'Timbits,' ran calculus and statistics tutorials, and much more. We kicked off the year with a free BBQ on the Chase balcony in early September. It was a huge success, and was followed by another Barbecue on Karl Dilcher's birthday (coincidence?) a few weeks later. The next big party we organized was on Halloween. We had an amazing turnout of both undergraduate and graduate students, and perhaps a few faculty members. The Calculator costume is still wandering the halls of the Chase building.

After Christmas break we started off with a pool night at the Locas Billiards Bar, but the biggest event of the year was yet to come. The Annual Wine and Cheese Night, which took place in the colloquium room on the first Thursday of February, featured 40 different wines accompanied by cheese, vegetable, and fruit plates, and some quality mingling between the faculty and

students, all to the sounds of classical music. In March, the annual Pi-Day celebration was in order.

Unfortunately this year Pi-Day was on Saturday (March 14th of course), and so we celebrated 'Pi-Day Eve' by feeding free pie to people on Friday night. The final event of the year was our AGM, which was scheduled, perhaps, at the busiest pre-exam time for all students. Here are the results:

Outgoing Exec:

President	Mark Pavlovski
Vice President	Victor Bomers
Treasurer	Jackie Suh
Secretary	Zu Chen
Communications	Maggie Jones
DSS Rep	Mica Das Gupta
DSS Rep	Kristina Silmarie
Member at Large	Jessica Vandorpe

Incoming Exec:

President	Jessica Vandorpe
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And the rest of the positions are yet to be filled next year! Weekly Wednesday Honours Seminars, organized by Robert Milson, were great and featured talks in many fields of mathematics given by Dalhousie professors, guest speakers and of course our own graduating honours students:

David Neil, *Coupled Oscillator Systems*, March 11.

Peter Crooks, *Grassmannians and Enumerative Geometry*, March 18.

Mark Pavlovski, *Mathematical Modelling of Epidemics*, April 1.

Tom Potter, *Tempered Distributions and the Hilbert Transform*, April 7.

Nathan Singer, *A Topological Lower Bound on the Chromatic Number of a Graph*, April 8.

All-in-all this was an active and fun year for the DUMASS. Thanks to everyone who helped make it a great year.

APICS UNDERGRADUATE

by Dr. O-Yeat Chan

The APICS undergraduate math competition and conference were held in Moncton this past October. Teams from universities all over Atlantic Canada participated, and we were able to send 1.5 teams this year – Matt Hemming and Zhenyu Guo on one team, and Wei Dai was paired up with a student from UPEI on arrival. The next APICS will be hosted right here at Dalhousie.

The much more difficult Putnam competition was held in December, with Zhenyu Guo and Wei Dai representing our department. Mr. Guo did quite well, ranking 762 out of 3627 contestants throughout North America.

STUDENT CENTRES

by Pierre Stevens

The Mathematics and Statistics Student Centre is an undergraduate support centre for students who are taking first and second year courses offered by our department.

Some of the resources available to first and second year students are the Mathematics and Statistics Student Centres. The department operates two learning centres, one in the Chase building and one in the Killam Library.

This has been the first year that the Centre has operated during the week days from [Room 119](#) in the Chase building (Monday-Friday 8.30 am- 5.00 pm.) The Centre reopened in September 2008 on the first floor in the old Agnes Baxter Reading Room location. From a maximum of 20-30 students we now have days when we comfortably operate with more than 50 students present. Contrary to the old location, which would be uncomfortably full with twenty students, the new location is comfortably humming along even with more than fifty students. It is a wonderful place.

I am sure that I speak on behalf of all students and TA's in expressing my thanks for this great new location.

In the evening (Monday to Thursday 7.00-10.00 pm), the centre operates out of Room G40M (the annex) in the Learning Commons in the Killam library

The staff for these tutorials consists of the director and Teaching Assistants (TA's). In the course of the day, staff changes at regular intervals. The Learning Centre TA's are comprised of graduate (PhD and MSc) students and honors graduate students.

This year we have enjoyed the valuable services of Melanie Abeysundera, Victor Bomers, Sylvia Churcher, Emma Connon, Vaneeta Grover, Andrew Hoefel, Matthew Hurshman, Karyn McLellan, Chris Levy, Lihui Liu, Ainsley Miller, Mark Pavlovski, Donald Patterson, Goldis Radjabalipour, Caroline Urquhart, and Liwen Zou. Thank you very much, all of you, for your dedication and contributions to a successful year.

CHEBUCTO COMMUNITY NET

by Andrew Wright

This June marks the fifteenth year of non-profit community internet in the province of Nova Scotia.

For fifteen years people with the most incredible stories, from all conceivable walks of life and personal circumstance, all with the same need, have crossed our threshold. Their common need was to be able to access what has become our ongoing common heritage from the comfort of their own homes.

You see, here in Nova Scotia the reality is that home internet access is a privilege, not a right. You have enough money, you can have home internet. Want to spend that money on medication or food or some other basic need? Too bad, so sad. Priorities.

Government-funded public access is all well and good, but it's in public buildings and not available 24 hours a day. You can only do so much on software-frozen public terminals.

Senior citizens, people having health issues, young parents, people on fixed or low incomes, these are our neighbours and sometimes our friends and we believe they should be able to send an email at 3 am if they want to.

With our non-profit webhosting we've given an online voice to hundreds of community organizations and thousands of individuals. In providing home internet access we've shared with each others' triumphs and we've grieved with each other's losses.

In the coming year we're working to bring high speed access to low income senior housing and maybe even try to expand our coverage area with a little help from our friends and neighbours. We'll continue working to bridge the digital accessibility divide and help our community.

Chebucto Community Net continues each year with a dedicated corps of volunteers who donate time, energy and even their own money to the common cause. The support of the Department of Mathematics and Statistics is gratefully acknowledged and appreciated.

A BUSY SUMMER

The Summer of 2008 was a very busy time for this Department, even after the AARMS Summer School had moved to UNB. And I'm not even counting the numerous Summer courses offered every year. Here is a brief list of activities, details for some of them can be found elsewhere in these pages.

May 30 - June 1: The 16th Workshop on "Foundational Methods in Computer Science" was held at Dalhousie, organized by Dorette Pronk and Peter Selinger. There were four tutorials aimed at students and newcomers to category theory, as well as 18 research talks. 31 researchers attended the event, including 11 graduate students, and some of the founders of the subject.

June 13: The Ninth Annual Bluenose Numerical Analysis Day was also held at Dalhousie last year. Local organizer was Pat Keast. There were nine talks and about 30 participants.

June 25 - 27: A Statistical Consulting Workshop. This was organized by David Hamilton and Chris Jones (statistical consultant at the time).

June 29 - July 5: Conference on "Groups of Self-Homotopy Equivalences", with Keith Johnson and

Renzo Piccinini as local organizers. There were 24 participants from around the world, and 20 talks.

July 6 - 11: The CMS-Dalhousie Math Camp, for 20 gifted Grade 10-11 students. This was organized by Suraj Sikka and Roman Smirnov. Presenters from this department were Jason Brown, David Hamilton, Theodore Kolokolnikov, Rob Milson, Dorette Pronk, Angela Siegel, and Bruce Smith. Josh MacArthur was one of the chaperones.

July 13 - 18: The Black Educators Association Math Camp (for students at the Junior High School level). Now in its 19th year, this very successful camp was once again co-organized by R.P. Gupta.

July 21: As part of the Shad Valley program at Dalhousie, Keith Taylor and Karl Dilcher each gave 1-hour presentations to a group of High School students.

August 12: Richard Nowakowski and Bruce Smith each met with two groups of 20 students as part of the High School Science and Engineering Week (or “Nerd Camp”, as the students themselves referred to it).

Numerous department members, including graduate students, gave talks or presented posters at conferences. It would be difficult or impossible to give a complete list, but it should be mentioned that The International Category Theory Conference 2008 (June 22 - 28 in Calais, France) was attended by five members of this department, namely Geoff Cruttwell, Toby Kenney, Bob Paré, Dorette Pronk, and Richard Wood. Apart from the University of Paris 7, this was the largest delegation from a single institution.

Thanks to everybody who helped make the Summer of '08 such an active and busy time for the department, and helped bring in visitors ranging from junior high school students to senior researchers. A particular thank-you to our office and support staff, Gretchen, Paula, Maria, Jackie and Balagopal, without whom some of these events could not have been hosted by our department. -kd

CMS MATH CAMP
DALHOUSIE UNIVERSITY
JULY 6-11, 2008
by Dr. Roman Smirnov

The 9th since 2000 Summer Math Camp was hosted by the Department of Mathematics and Statistics at Dalhousie University from July 6 till July 11, 2008. The event was sponsored by the Canadian Mathematical Society (CMS) and Dalhousie University. The goals were to identify, stimulate and encourage mathematical and statistical talent among Nova Scotia high school students. In addition, it was an opportunity to introduce and attract potential Dalhousie students to our programs. The camp, organized by Suraj Sikka (Dalhousie and St. Mary's) and Roman Smirnov (Dalhousie University), consisted of lectures and problem-solving sessions conducted by Faculty members and a PhD candidate from Dalhousie and Saint Mary's Universities, - Robert Dawson (St. Mary's), David Hamilton (Dalhousie), Bert Hartnell (St. Mary's), Theodore Kolokolnikov (Dalhousie), Robert Milson (Dalhousie), Dorette Pronk (Dalhousie), Angela Siegel (Dalhousie), and Bruce Smith (Dalhousie) - as well as extracurricular activities, during which the students were chaperoned by Sunita Gupta (Millwood High) and Josh MacArthur (Dalhousie). Keith Taylor (Dalhousie) supported the camp by giving opening and closing remarks, as well as suggesting some interesting problems. We appreciate greatly their contributions and are also thankful to Gretchen Smith, the departmental administrator, as well as the secretaries, Maria Fe Elder, Paula Flemming, and Jackie Harnish-Grandy for their invaluable help in organizing and running the camp, and the PhD candidates Neil McKay (Dalhousie) and Rebecca White (Dalhousie) who were hired to help with the traditional Friday's BBQ. Judging by the feedback from the students the Math Camp was a great success. More information about the camp can be found on the camp website:

<http://www.mathstat.dal.ca/~smirnov/cmsdalmathcamp08>.

MATH CAMP FOR BLACK STUDENTS

by Dr. R.P. Gupta

The sixteenth mathematics camp for black students was held the second week of July 2008. The camp was organized by the Department of Mathematics and Statistics and the Black Educators Association of Nova Scotia. Thirty students, 17 female and 13 male were selected to attend the camp from schools all over Nova Scotia.

The aim of the camp is to generate interest in mathematics, statistics, & computer science so these students can pursue further studies in these subjects.

The students are generally of grade six and seven and are brought to the Dalhousie campus. While here they stay in Howe Hall. The students arrived registered on Sunday, July 9, between 1:00 p.m. and 2:30 p.m. The organizers, four chaperons and all six instructors received them well. A reception to students and their parents was held at 2:30 p.m. Students as well as parents were told their responsibilities as well as their expectators.

Mornings and early afternoons are devoted to lectures in mathematical, statistical and computer activities, while late afternoon and evenings are devoted to extra curricular activities where they can apply the talents they have learned in the classes.

They are taken to Dalplex for one hour each afternoon where they participate in swimming and play other games such as basketball, tennis, etc.

They also visited the Nova Scotia museum of history and science and the Discovery Centre. Students of the Camp also spent an evening at the Black Cultural Centre in Dartmouth where they were told about the mathematicians and scientists of black origin and also saw a film.

Closing ceremonies were held on Friday, the 14th followed by pizza. The students were picked up by their parents.

The students were taught and cared for by seven instructors (three university instructors and three school teachers) and four chaperons. The Camp was organized under the directorship of Professor

R.P.Gupta of Dalhousie University and Mr.Gerry Clarke of the Black Educators Association. It was financially supported by an NSERC Promo Science Grant, Dalhousie University and the BEA.

AARMS SUMMER SCHOOL 2008 and 2009

by David Langstroth

The seventh annual AARMS Summer School was held at UNB-Fredericton July 13 to August 9, 2008. We offered four demanding graduate level courses: Computational Methods for PDEs, by Anne Bourlioux, Université de Montréal (assisted by her student Pascal Turbis); Tropical Geometry by Diane Maclagan, University of Warwick; Mathematical Finance, by Mark Reesor, University of Western Ontario; and Representation Theory of Algebras by Ralf Schiffler, University of Connecticut.

More than 30 students took classes; although most were based at Canadian universities, we were happy to welcome young mathematicians from Mexico, Brazil, Jamaica, Russia, England, the Netherlands and the United States.

The next Summer School runs July 13 to August 7, 2009 at UNB Fredericton. We will then offer Algebraic Topology by Gustavo Granja (Lisbon); Topological Combinatorics by Daniel Matei (Bucharest); Introduction to Quantum Computing by David Kribs (Guelph); and Cryptography by Mike Jacobson (Calgary). For more information please visit www.aarms.math.ca/summer

REPORT FROM THE COMPUTER RESOURCES COMMITTEE

by Dr. Bruce Smith

All server services and machine room infrastructure functioned problem free throughout 2008-09.

Funding from the Faculty of Science allowed for the purchase of notebooks, data projectors, LCD monitors and printers. We now have 6 projectors and 8 notebooks available teaching and research seminars. The central printers in the mailroom and basement were replaced with new heavy duty Lexmark printers, which are faster and less expensive to operate than our old

printers. Beginning with Ph.D. student computers, we are phasing out all of the bulky and power hungry CRT monitors in the building, and replacing them with efficient LCD monitors. At this time, about half of our old monitors have been replaced.

A successful NSERC equipment grant application by Mike Dowd and other members of the Statistics Division will allow for a significant upgrade to the departmental compute cluster. The upgraded system will provide significant power savings, reduced cooling requirements, and a substantial performance improvement for computational jobs requiring large amounts of RAM.

STATISTICS SEMINAR

by Dr. Michael Dowd

Our Statistics seminar series was active over 2008 and 2009. We had number of speakers from Dalhousie University, and the local research community (Acadia, MSVU). From further afield, seminars were given by Dr. Grace Chiu (U Waterloo) and Dr. Julie Horrocks (U Guelph), both of whom were doing sabbaticals in the department. One highlight was the lecture on Statistical Thinking given by Dr. Paul Velleman from Cornell; this was extremely well attended by people from across the university community.

MATHEMATICS COLLOQUIUM IN THE ACADEMIC YEAR 2008/2009

by Dr. Peter Selinger

I am pleased to report that the Mathematics Colloquium is alive and well. What makes a colloquium series successful is the high quality of its talks, the variety of topics covered, as well as their appeal to a broad audience of mathematicians from within and without the department. In the 2008/2009 academic year, we were once again lucky to have a line-up of informative and enjoyable talks satisfying all of the above criteria.

The work of a colloquium chair would be impossible without the help of colleagues who suggest good speakers and act as local hosts. Their names are shown in parentheses in the list of talks below. I would also like to take this opportunity to thank my predecessors as colloquium chair, Roman Smirnov, whose term

ended in December 2007, and Karl Dilcher, who filled this role from January to June 2008. From them I inherited a well-oiled operation.

July 10, 2008: Ron Ferguson (Simon Fraser)
Problems in Low Height Polynomials (David Iron)

September 8, 2008: Richard Nowakowski (Dalhousie)
Play Time: a History of Combinatorial Game Theory

September 22, 2008: Mitja Mastnak (St. Mary's)
Combinatorial Hopf Algebras (Richard Wood)

September 29, 2008: Alexander Turbiner (CRM and National University of Mexico)
Solvable Schroedinger equations and representation theory (Robert Milson)

October 20, 2008: Renzo A. Piccinini (Dalhousie)
Conjugacy Classes of Gauge Groups

October 23, 2008: Daniel Klain (U. Massachussetts Lowell)
If you can hide behind it, can you hide inside it? (Tony Thompson)

November 3, 2008: Philip J. Scott (U. Ottawa)
Reflections on a Categorical Foundations of Mathematics (Peter Selinger)

March 9, 2009: Eva Knoll (Mount St. Vincent)
A Medley of Mathematics in (Contemporary) Art (Karl Dilcher)

April 2, 2009: Karl H. Hofmann (Darmstadt and Tulane)
Pro-Lie groups: a class of infinite dimensional Lie groups (Karl Dilcher)

April 20, 2009: Mike Bennett (UBC)
Why would anyone study Diophantine equations? (Karl Dilcher)

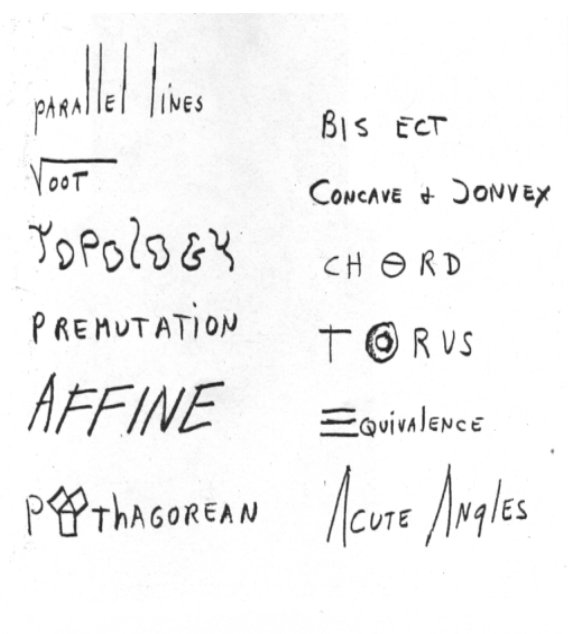
Planned talks:

Jun 15, 2009: Davide Ferrario (U. Milano-Bicocca)
Symmetric periodic orbits in the n-body problem (Renzo Piccinini)

MATHEMATICAL AMUSEMENTS

Edited by
Dr. S. Swaminathan

Once while on a train ride, Martin Gardner, famous for his *Mathematical Games* section in the *Scientific American* and popular books on mathematical and scientific topics, started doodling after reading some pages of an issue of *Mad* magazine. He managed to produce a number of mathematical examples of the sort of amusements presented in that magazine. Below are given a few of his doodles. After you enjoy the following ones try to come up with your own and send me your examples.



CHASE REPORT

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We welcome your suggestions and comments
for future issues.

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