



CHASE REPORT

**NEWSLETTER OF THE DEPARTMENT OF MATHEMATICS AND
STATISTICS**

MAY 2005

DALHOUSIE UNIVERSITY

HALIFAX, N.S. B3H 3J5



DEPARTMENT OF MATHEMATICS AND STATISTICS, DALHOUSIE UNIVERSITY

GRADUATE STUDENTS AND GRADUATE STAFF MEMBERS

2004-2005

CONGRATULATIONS

AWARDS WINNERS

Sir William Young Gold Medal in Math

Christy Rae Cameron

University Medal in Statistics

Catherine F. French

Ralph & Frances Lewis Jeffery Scholarship

Shannon Ezzat & Christy Rae Cameron

Barry Ward Fawcett Memorial Prize

Jillian M. Falkenberg

Ken Dunn Memorial Prize

Amanda Elizabeth Halladay

Katherine M. Buttenshaw Prize

Christy Rae Cameron

Bernoulli Prize

Marc Humber

Waverly Prize

Kristian A. Richards

Emil and Stella Blum Award in Mathematics

John G. Hendry

Ellen McCaughin McFarlane Prize

Micah B. McCurdy

NSERC AWARD WINNERS

NSERC CGS-M: *Christy Cameron*

NSERC PGS-D2: *Ryan Lukeman*

NSERC PGS-D3: *Geoffrey Cruttwell*

GRADUATING HONOURS STUDENTS

Honours - Mathematics

<i>Christy Cameron</i>	First Class Honours
<i>Matthew Donaldson</i>	Honours
<i>Shannon Ezzat</i>	First Class Honours
<i>Rania Ghanam Hussain</i>	Honours
<i>Marc Humber</i>	Honours
<i>Garrett MacLean</i>	Honours
<i>Sable McKeil</i>	Honours
<i>Sarah Young</i>	Honours
<i>Gregory Rockwell</i> (Chemistry & Math)	First Class Honours

Honours - Statistics

<i>Catherine French</i>	First Class Honours
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GRADUATE STUDENTS

Recent Graduates:

October 2004 Convocation:

Mathematics

Adrian Tang, MSc
John Klapstein, MSc
Margaret-Ellen Messinger, MSc
Joel Patterson, MSc

Statistics

Qing Liu, MSc

CHAIR'S REPORT

by Dr. Pat Keast

This is my second year as Chair of the Department of Mathematics and Statistics, a busy year with many changes taking place, and many new faces about to arrive. The year from May 2004 to now has seen three long-standing members of the Department prepare to retire, and 1.5 resignations. (It is a peculiarity of Universities, I think, that we can have half people on faculty.) Balancing this, bringing in new ideas, enthusiasm and imagination, we have one new person who started last July, three more who will start in July 2005 and one more in January 2006. One of these appointments is a University Faculty Award, an award targetted by the Natural Sciences and Engineering Research Council towards increasing the representation of women in engineering and the natural sciences. Of 23 awarded this year, 3 came to Dalhousie, which is a remarkable record. Two of our Statisticians received recognition from two national groups for their research and service. Our undergraduate majors and honours students have taken part in two competitions, and acquitted themselves well. Our Graduate Student Society has been busier than ever under the presidency of Jin Yue, and now has an excellent web page. Also, in the past year, the outreach efforts involving the Math Circles and the Math League, have begun to really bear fruit, thanks to the efforts of several graduate students and faculty. And, more recently, the Atlantic Community Mathematics Network is about to begin its first interaction with 26 mathematics teachers across Atlantic Canada. Details of these activities and other information are in this Newsletter, documenting another successful year in the Department.

ENVIRONMENTAL STATISTICS

by Drs. K. Thompson and Michael Dowd

In 2002 Keith Thompson was awarded a Tier I Canada Research Chair in Marine Prediction and Environmental Statistics. As part of its commitment to the chair, the university hired two junior tenure-track positions in the Statistics Division. Dr Michael Dowd joined the department in July 2003 and Dr Joanna Mills-Flemming will officially join the department on July 1, 2005.

The research interests of the team cover a wide range of problems in Statistics and their application to environmental and marine prediction problems. Michael Dowd is interested in nonlinear state space models, time series and spatial analysis. Current applications include differential equation-based nonlinear dynamic models for marine ecological processes, which are treated within the framework of time-dependent statistical estimation. Michael is also involved with Dalhousie's Centre for

Marine Environmental Prediction in developing, for example, predictive models in support of the Lunenburg Bay ocean observatory. Joanna Mills Flemming is interested in modeling both temporally and spatially dependent data and has a particular interest in robust models which are useful for applications in biology. Joanna plans to allow some of the applied aspects of her research to be influenced by environmental issues pertaining to the Maritimes. Together with Professor Chris Field and Professor Rick Routledge (SFU), Michael and Joanna are organizing an international workshop on spatial/temporal modeling for marine ecological systems. The workshop will be held at Dalhousie in August 2005 and is sponsored by the National Program on Complex Data Structures. Joanna will also be teaching a class in Environmental Risk Assessment and will be cross-appointed with Environmental Science. On the Statistics side Keith Thompson has continued his research in time series analysis, data assimilation (combining dynamic models of the ocean with observations) and the analysis of extremes. One of the tangible benefits of this type of research is construction of models that can make useful predictions of the marine environment. Keith has continued his interaction with government agencies on storm surge forecasting and the prediction of deep ocean 'weather'. Keith is also a co-lead with Hal Ritchie of Environment Canada on a proposal to the Canadian Foundation for Climate and Atmospheric Science to establish a national research network entitled 'Prediction and Predictability of the Global Atmosphere-Ocean System on Time-Scales of Days to Decades'.

Over the next few years we anticipate contributing to a vigorous research program in applied statistics in the department and also strengthening ties to other departments and faculties. In addition to Oceanography, we expect to link more strongly with other departments such as Biology, the College of Pharmacy, and the Faculty of Management through their new Center for Risk. As indicated above there will be many opportunities for national and international collaboration with both government agencies and university research groups. We plan to actively pursue such collaborations and thereby better train our students and also carry out research that will help solve important environmental problems.

ALUMNI AND FACULTY NEWS

Congratulations to *Michael Newton*, an honours Statistics graduate from Dal in 1986, on being awarded the COPSS (Committee of Presidents of Statistical Societies) President's Award as the outstanding Statistician under the age of 40. If you remember Michael and would like to congratulate him on this honour, his address is newton@stat.wisc.edu.

Ray McLenaghan (Waterloo) has been appointed as an External Scholar to co-supervise (jointly with R. Smirnov) *Caroline Adlam*, who is working on her Master degree.

Dr. Jason Brown used mathematics to discover how the Beatles played the opening chord of *A Hard Day's Night*. This research was first published in the October 2004 issue of the CMS NOTES, and subsequently attracted media attention (front page of the National Post, Global National News, CBC's *As It Happens*, Radio Canada International). The article was translated into Swedish in *Beatles Nytt* and the research also appeared in Guitar Player Magazine.

Ed Susko has been made a Fellow of CIAR (Canadian Institute of Advanced Research).

Chris Field was awarded the Distinguished Service Award by the Statistical Society of Canada at its annual meeting in Montreal in June 2004. The citation read...

"Chris Field has occupied practically all of the important SSC posts. He has participated in numerous committees; he has chaired the scientific committee for the IMS-SSC meeting in Montreal in 1995. He was President of the SSC in 1993 and has been a member of national statistics committees, such as the NSERC Statistics Grants Selection Committee and the Statistical methods Advisory Committee of Statistics Canada. He has been an Associate Editor of the Journal of the SSC. For 25 years Chris has been one of the most eminent representatives of the SSC in the Maritimes."

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Congratulations to *Richard Wood* whose book, *Introductory Mathematical Analysis* (for Business, Economics, and the Life and Social Sciences) 11th ed. authors: Ernest F. Haeussler, Jr., Richard S. Paul, Richard Wood, has just been published by Pearson/Prentice Hall.

Congratulations to Dr. Richard Wood on being awarded the Science Undergraduate Student Society Teaching Award for 2004/05.

Holger Teismann (Acadia) and Roman Smirnov (Dalhousie) put forward the initiative to organize a joint Acadia-Dalhousie Applied Mathematics Seminar. The seminar is to commence its activities in September 2005.

Richard Wood who is on sabbatical is working on a paper called 'Cartesian Bicategories II', jointly with Aurelio Carboni and Max Kelly. This is based on research they did together in Sydney, Australia during January - March of 2005.

DEPARTMENT NEWS

STATISTICS DIVISION

by Dr. David Hamilton

The Statistics Division has had an interesting and productive year. With a relatively small number of faculty, it continues to offer a full range of academic programs, undergraduate and graduate. Due to success in obtaining funding from outside sources (Atlantic Genome Project, Canada Research Chairs) the Division has been able to increase its graduate enrolment significantly. The demand for Statistics graduates remains high, and our former students have achieved great success in academia, government, business and industry. We are particularly proud of Michael Newton, a former undergraduate student and faculty member at the University of Wisconsin, who was recently awarded the international COPSS Award in recognition of his remarkable achievements in statistical research before the age of forty. Our faculty remains active publishing their research, and attending and organizing scientific meetings. Research groups have evolved in the areas of Statistical Genetics (genomics, quantitative traits and genetic epidemiology) and in Environmental Statistics. We look forward to welcoming new faculty member Joanna Mills-Flemming this summer, and at the same time, we wish Chris Field well in his retirement.

MATHEMATICS DIVISION

by Dr. Dorette Pronk

Our division of mathematics has seen a lot of exciting developments this year in our connections with math departments and researchers at other universities as well as with people in our local community. These connections provide both a stimulating study environment and interesting opportunities for our undergraduate and graduate students, as well as our faculty members.

High School Level Outreach

Aside from the well-attended Nova Scotia math league and Math Circles program our department has been involved in the Dalhousie Open House (in October 2004), the CMS summer camp, and the math camp for black students. Dorette Pronk will also be serving as deputy leader on the Canadian team for the International Math Olympiad and Paul Ottaway will be participating as one of the team's coaches. The team's training will be at the Banff International Research Station and the Olympiad will be held in Merida, Mexico this year.

Accomplishments of our Students

We also want to take this opportunity to celebrate the achievements of our current and past students. Kathryn Duffy, who graduated from Dalhousie in May 2004 with a joint honours degree in mathematics and computer science, is continuing her graduate studies in computer science at Queen's with an NSERC CGS doctoral scholarship of \$35,000 per year. John Klapstein was also accepted into the

doctoral program in mathematics at Queen's. We also congratulate our honours student, Christy Cameron, who received an NSERC awards to attend grad school this fall. Two other honours students, Rachael Manion and Sable McKeil spent their fall semester in Mexico and returned in January with an increased knowledge of Spanish and new energy to dive into mathematics and be involved in the life of our department. Sarah Young, another math honours student, wrote the LSAT examination and placed in the very top category of students writing this exam. We wish her the best for her studies and career in law. Micah McCurdy is the recipient of an NSERC summer research fellowship and will be studying category theory with Bob Par  . He will also spend a couple of weeks in Belgium at a summer school to study topos theory with leaders in this field such as Peter Johnstone and Ieke Moerdijk. Tara Taylor, one of our PhD-students, is defending her thesis this month and has received a tenure track position at Saint Francis Xavier University. We congratulate Tara on these achievements and wish her the very best for her continued career in mathematical research and teaching.

Visitors

We have had the privilege of hosting and collaborating with several long-term visitors, both from other Canadian and international institutions. Edgar Goodaire (from Memorial University in St. John's, NL) and Orin Chein (from Temple University in Philadelphia) spent their sabbatical leaves here at Dalhousie to work together. Mark Chamberland from the Department of Mathematics and Computer Science at Grinnell College, has spent the past year with us working on joint projects with Karl Dilcher and Jon Borwein. Drs. Lee and Kim (from China) have visited us to work with K. K. Tan. Mark Fels (Utah State University) spent several months with us in the fall of 2004, and assisted Rob Milson in organizing a special session at the CMS 2004 summer conference. As a follow-up to this session, Alan Coley, Rob Milson, and Mark Fels organized an AARMS workshop on symbolic computation.

Conferences

June 13 – 15, 2004, our department hosted the joint meeting of the Canadian Mathematical Society and the Canadian Applied and Industrial Mathematics Society. We thank our local organizers Richard Wood (CMS) and Ray Spiteri (CAIMS) for a very successful meeting with more than 600 registered participants, many of whom were graduate students. The poster sessions both before and during the meeting were well-attended and gave graduate students a wonderful opportunity to present their work. Many of our faculty either organized sessions or presented papers at this meeting. The undergraduate students also took advantage of this joint meeting. The Dalhousie math undergraduate student society MASS hosted the Canadian Undergraduate Mathematics Conference right after the joint meeting of the CMS and CAIMS, and invited some of their speakers. They had a very successful meeting with many well-attended and

well-presented sessions. We thank Gilman Payette for his work as local organizer.

Seminars

Aside from the colloquium, we have had regular meetings of the following seminars this year: the algebra and category theory seminar, the graph theory seminar, and the general relativity seminar. All of these seminars have been well attended by both faculty and students.

Postdoctoral Fellowships

This past year we have had the exceptional privilege of hosting two Killam postdoctoral fellows, Sigbj  rn Hervik and Gabor Lukacs, in general relativity and algebra respectively. They will both stay with us for another year, as will Eva Curry (in analytic number theory) and Nicos Pelavas (in general relativity). This coming year they will be joined by two new postdocs in algebra and category theory, Kia Dalili (with an AARMS fellowship) and Jeff Egger. We recognize their valuable contributions to both the teaching and research of this department.

Conferences

The research contributions of our department members are also recognized by other institutions as is apparent from the list of conferences where our faculty members have been invited to speak or have served as organizers.

- David Iron gave a talk at the SIAM Conference on Analysis of Partial Differential Equations and will be giving a talk at the CAIMS 2005 meeting in June.
- Richard Nowakowski gave an invited lecture at the East Coast Combinatorics Conference, January 2005.
- Jon Borwein has given about 35 invited lectures and presentations on various topics related to mathematics, education, and computation, in a great variety of venues over the past year.
- Organizer: R. Nowakowski, Games-At-Dal 3 Workshop. 12 participants from Canada, France, New Zealand and USA. June 2004
- Organizers: J. Janssen, R. Nowakowski, CMS Special Session on a: Scale Free networks; b: Games. June 2004
- Organizer: R. Nowakowski, Banff International Research Station, Combinatorial Game Theory Workshop, June 2005.
- Organizer: P. Keast, The Sixth Annual Numerical Analysis Day, to be held at Cape Breton University on June 10, 2005.
- Ray McLenaghan (Waterloo) and Roman Smirnov (Dalhousie) are organizing a session entitled "Invariant

Theory and Differential Geometry” at the CMS/CSHPM Summer 2005 Meeting to be held June 4-6, 2005 at the University of Waterloo.

RETIREMENTS

Christopher Arnell Field has been a member of our department for 35 years and will be retiring in July of 2005. A Symposium in his honour will be held at Dalhousie University on August 15, 2005, consisting of invited talks by several of his collaborators and former students. Please see <http://www.mathstat.dal.ca/~hamilton/fieldsymp.html> for more information on the Symposium. Space is limited, and if you would like to attend, please contact Joanna Mills-Flemming. (flemming@mathstat.dal.ca).

Chris will not be retiring from the research component of his work, and will continue well-funded research and supervision of graduate students working in the Atlantic Genome project. His long association with the Department (since 1970), will continue.

William Richard Stanley Sutherland (Dick) will also retire on June 30. He too came to Dalhousie in 1970, and has seen the department expand dramatically, while moving repeatedly until we came to rest in this beautiful building in 1985.

Kevin James Michael Moriarty retires on June 30, after 22 years at Dalhousie, part of that time, in the Division of Computing Science, until a Faculty of Computer Science was formed.

PROMOTIONS AND TENURE

Congratulations to *Dr. Dorette Pronk* who received tenure and was promoted to the rank of Associate Professor this year.

Congratulations to *Dr. Bruce Smith* who was promoted to the rank of Full Professor this year.

NEW FACULTY

In July 2004, *David Iron* (PhD UBC) joined us, and has since survived his first Nova Scotia winter. He thinks that the winter is over, but as any Nova Scotian of long standing knows, it could snow again before July.

In July, three new faculty start. *Joanna Mills-Flemming* (PhD Dal) who has spent 2 years in Geneva takes up her Assistant Professor position in Environmental Statistics. (See the article earlier in the Newsletter.)

Sara Faridi (PhD Michigan) takes up a University Faculty Award (UFA), also in July.

Peter Selinger (PhD Pennsylvania) begins as an Associate Professor in July.

Theodore Kolokolnikov (PhD UBC) takes up a position as Assistant Professor in January, 2006.

GRADUATE STUDIES REPORT – MATHEMATICS

by Dr. Keith Johnson

There were 8 Ph.D., 7 M.Sc. and 4 qualifying year graduate students in mathematics during the 2004/05 academic year. Four of the Ph.D. students - Yanjing He, Richard Hoshino, Tara Taylor and Jin Yue will defend their Ph.D. theses during the coming summer term. Three of our current M.Sc. students - Geoff Crutwell, Josh McArthur and Angela Seigel will continue in the Ph.D. program in 2005/06 together with Margaret Messinger who completed her M.Sc. in October 2004. We have so far admitted 10 new students to the M.Sc. program for 2005/06.

GRADUATE STUDIES REPORT – STATISTICS

by Dr. C.A. Field

This year we welcomed nine new students to our graduate programme in Statistics. Talia Beech, Chris Jones and Paul Sheridan came from undergraduate programmes at Dal, Shuyan Li from a qualifying year at Dal, Cathy Wamboldt and Sean Smith from Acadia and Wenyi Jiang, Le Bao and Jihua Wu from Chinese Universities. We currently have 15 MSc and 5 PhD students in Statistics. We have obtained funding from Genome Atlantic, the Center for Marine Environmental Prediction and NASA to help fund our graduate students.

Caren Rose, Eric O'Neill and Qing Liu graduated with their MSc this past year. To date, we have admitted six new graduate students for 2005/06 and expect to admit two more. In addition three of our current MSc students will be continuing with their PhD.

UNDERGRADUATE STUDENT SOCIETY NEWS

Math and Stats Society

Sarah Chisholm, President, reports on behalf of Shannon Ezzat, VP, Sarah Young, Secretary and Grant Parady, Treasurer:

Early in the fall term we had two barbeques out on the patio, and luckily we had beautiful weather for each one. The council members set to work prior to the first barbeque

to go around to as many math and stats classes as possible to promote and make awareness of our event. There was a great turnout each time and lots of new faces. As I remember, one of the barbeques ended with a snowball fight using the shaved ice in the cooler.

Following the barbeques, we had a Halloween party in the Colloquium room. It was the first event where we got to test out our fancy new stereo, which we had bought just prior to the party. There was another fantastic turnout, and lots of great costumes.

Our Christmas exam tutorials went very smoothly and we made a satisfactory profit. There was a huge turnout of students and overall success. Hopefully the tutorials this term will go just as well.

Our next big bash was in the winter term and it was the annual Wine and Cheese. I don't think I have ever seen more people jammed into the Colloquium room, so needless to say, another great turnout. Everyone there seemed to have had a great time and the food was really delicious, and I guess the wine was too, considering how fast it disappeared. It was also nice to see most people dressed up in their finest.

Following the Wine and Cheese, we booked the top floor of the Grad House, which couldn't have been an easier event to put on—but still fun. There weren't too many people there at any given time, but overall, plenty of people stopped by for a little bit. In retrospect, perhaps holding a social event right before Easter weekend is not the best idea.

There were a few other events that were not affiliated with Dalhousie or MASS that were organized by a few students, i.e. Alan Hill and Melodie Umanetz, such as the pub nights and pub crawls that were a lot of fun. Alan and Melodie also made Math and Stats shirts, to create a sort of club like feeling among the students. The shirts are pretty cool, with a "cute" (according to Alan) Math Man on the front, which is a rip-off of the show Square One. If anyone is still interested in a shirt, there are a few left to sell. Our financial situation was not the most ideal this year. Due to some missing info in the books from last year's treasurer, we failed our fall audit. Math and Stats society failing the audit—how ironic! Then when it came time to do our winter audit our Treasurer went MIA. But we made due with what little funds we had. Unfortunately, we were not able to fulfill all of our goals, but I think we've done ok. Hopefully when the activity around school settles down, we will be able to sort this all out, and look back and laugh.

The AGM was a big success this year and we even have enough interest in the council for next year that we've created a few new positions. The results of the election are as follows:

President: Rachel Manion

Vice-President: Dave McNutt

Treasurer: Sarah Chisholm

Secretary: Amanda Halladay

Sports Representative: Steve Chisholm

DSS Representatives: Micah Blake McCurdy and Jill Falkenberg

For the remainder of this year, we are trying to arrange for several of our undergraduates to go up to Queen's in July for the CUMC. This should be a lot of fun and it is something that we are looking forward to.

As a final note, thank you to everyone that has supported MASS in any way this year, your support has been greatly appreciated.

THE MATHEMATICAL CONTEST IN MODELING

The Mathematical Contest in Modeling (organized by COMAP) was held February 3-7, 2005. Our department participated with two teams this year. One team was formed by Shannon Ezzat, Bob Garrish, and Micah McCurdy. The other consisted of Ankur Chopra, Etai Markowski, and Lylia Mogosumova.

The teams had from Thursday 9 PM until Monday 9 PM to work on one of the following two problems:

PROBLEM A: Flood Planning

Lake Murray in central South Carolina is formed by a large earthen dam, which was completed in 1930 for power production. Model the flooding downstream in the event there is a catastrophic earthquake that breaches the dam.

Two particular questions:

Rawls Creek is a year-round stream that flows into the Saluda River a short distance downriver from the dam. How much flooding will occur in Rawls Creek from a dam failure, and how far back will it extend?

Could the flood be so massive downstream that water would reach up to the S.C. State Capitol Building, which is on a hill overlooking the Congaree River?

PROBLEM B: Tollbooths

Heavily-traveled toll roads such as the Garden State Parkway, Interstate 95, and so forth, are multi-lane divided highways that are interrupted at intervals by toll plazas. Because collecting tolls is usually unpopular, it is desirable to minimize motorist annoyance by limiting the amount of traffic disruption caused by the toll plazas. Commonly, a much larger number of tollbooths is provided than the number of travel lanes entering the toll plaza. Upon

entering the toll plaza, the flow of vehicles fans out to the larger number of tollbooths, and when leaving the toll plaza, the flow of vehicles is required to squeeze back down to a number of travel lanes equal to the number of travel lanes before the toll plaza. Consequently, when traffic is heavy, congestion increases upon departure from the toll plaza. When traffic is very heavy, congestion also builds at the entry to the toll plaza because of the time required for each vehicle to pay the toll.

Make a model to help you determine the optimal number of tollbooths to deploy in a barrier-toll plaza. Explicitly consider the scenario where there is exactly one tollbooth per incoming travel lane. Under what conditions is this more or less effective than the current practice? Note that the definition of "optimal" is up to you to determine.

Both teams chose problem B.

I want to thank all six students for the work they have put into this. (I understand that both teams had a great time working on this problem.) We will hear in about a month how well they have done.

THE MATHEMATICAL CONTEST IN MODELING RESULT

I just received the results from the Math Modeling Contest this weekend. There was a very high number of participating teams this year, 644 in total. Both of our Dalhousie teams ended in the "Successful Participant" category.

APICS

Last October, Roman Smirnov and four of our undergraduate students attended the APICS conference in St John, NB. (Due to various conflicting commitments and other conferences the size of our delegation to APICS was rather small this year.) Our students, Traves Squires, Timothy Caley, Shannon Ezzat, and Micah McCurdy, formed two teams in the undergraduate mathematical problem solving competition.

Aside from the competition, our students appreciated the opportunity to meet with students and faculty from other atlantic universities and attended their research presentations. We thank Roman Smirnov and our students for representing Dalhousie University in this way.

PUTNAM COMPETITION RESULTS

Some of our students participated in our Putnam competition last December. Timothy Caley scored 30 pts (out of 42) and ranked 327.5, and [redacted] scored 18 pts and ranked 733.5

Congratulations to Timothy and [redacted] for these great results! We thank all our students for their participation in this competition.

ACTIVITIES OF THE MATHEMATICS AND STATISTICS DEPARTMENT OUTREACH GROUP

The group consists of Richard Nowakowski, Paul Ottaway, Angela Siegel.

1: MATH LEAGUE

(<http://www.mathstat.dal.ca/~mathleague/index.html>)

The Nova Scotia High School Math League is an initiative run by the Department designed to stimulate and challenge high school students across the province. The NSML is based on the very successful Newfoundland Math League which has been running since 1987. The first game was run in Halifax in 2002 by Richard Hoshino and Sarah McCurdy. Since then there has been no looking back. At the end of the 2003-2004 season we had approximately 200 participants across three school boards, Halifax, Truro and Sydney. When possible, one of us has attended the games in Truro and Sydney. The number of participants has increased this year to approximately 250. Next year, the South Shore District will start entering teams in the competition.

2004-2005 Schedule

Game 1:

Halifax	Sydney	Truro	Attendance
Oct 30th Dalhousie	Nov 6th UCCB	Oct 27th NSCC	150+70+42*

Game 2:

Halifax	Sydney	Truro	Attendance
Feb. 12th Dalhousie	Feb 12th UCCB	Feb 12th NSCC	160+70+62*

Game 3:

Halifax	Sydney	Truro	Attendance
Apr 2nd St. Mary's	Apr 2nd UCCB	Mar 31th NSCC	150+70+56*

*This figure includes teachers or parents who attended as the coach of the team.

Provincial Final University of Cape Breton, May 1

The 3 top teams from each region were invited to attend as well as the next 6 best teams. The results were, teams listed in alphabetical order,

Gold Medal Winners: C.P.Allen, Halifax Grammar Team B, Queen Elizabeth

Silver Medal Winners: Cobequid Education Centre Team A, Cobequid Education Centre Team B, Halifax Grammar Team A, J.L. Ilsley, Riverview

Bronze Medal Winners: Glace Bay, Hants East Rural, Sackville High, South Colchester Academy, St. Patrick's, Sydney Academy Team A, Sydney Academy Team B

Next year, the South Shore District schools will enter the competition.

Organization of a game:

- a) 6 rounds of team questions worth 5 marks each, time allotted 5 minutes per round;
- b) Nutrition break;
- c) 4 rounds of team questions 5 marks each, time allotted 5 minutes per round. At the same time there is a meeting with the teachers;
- d) 2 relay rounds worth 5 marks with bonus points for speed.

Thanks to many people, but particularly to Paul Ottaway who has done a tremendous job whipping the problems into shape and officiating at the events.

2: MATH CIRCLES

(<http://www.mathstat.dal.ca/~mathcircles/index.html>)

This is a series of 5 lectures for High School students and Teachers. Each event has attracted 45-50 people mostly students and teachers but with a smattering of graduate and undergraduate students and others. The youngest participant is in Grade 6 and the oldest is 66. The talks are held at Dalhousie University but we have had several requests to put these on streaming-video so that places outside of Halifax can view them. We are looking into this possibility. An evening was split into three: an initial talk either about one subject or an introduction to the main topic followed by supper (pizza), then the main subject for the evening. The talks were designed to have the students be active participants. The presenters succeeded admirably.

The talks were.

February 10, Paul Ottaway and Richard Hoshino
Math Contest Writing Skills

February 17, Jason Brown and John Clements
Music and Mathematics / The Dark Side of Mathematics

March 3, Jon Borwein and Dorette Pronk
Mathematical Explorations

March 10, Keith Taylor and Robert Milson
The Golden Ratio

March 31, Cathy Wamboldt and Sean Smith
Probability in Practice

Our thanks go to the people who gave lectures and to those who also volunteered but did not speak. (We'll get you next year.)



Atlantic Community Mathematics Network About to be Deployed



The Atlantic Community Mathematics

Network (ACMN) is a Dalhousie-based initiative led by Jonathan Borwein that aims to improve the quality of math education in Atlantic Canada. Our goal is to reduce the number of children who become disengaged from mathematics by providing support for teachers and parents at all levels from K-16. We expect to begin with 26 teachers in the first year, and to grow in each successive year towards our goal of including every math teacher in our region. Teachers will connect with the network through access grid technology and low cost camera and microphone technology. The central node will be located in the new D-Drive lab in the Faculty of Computer Science. As well as facilitating meetings through video conferencing the ACMN will maintain web resources and provide opportunities for educational research and other collaborative initiatives. www.cs.dal.ca/agatemath



David Langstroth,
AGATE-M Administrator
Faculty of Computer Science

D-Drive Opens for Business

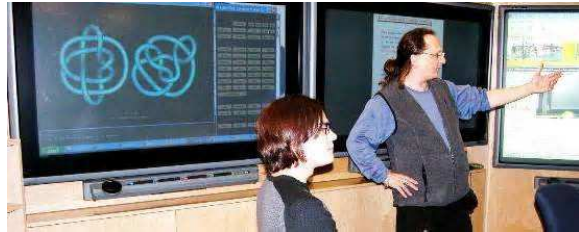


The Dalhousie Distributed Research Institute and Virtual Environment (D-Drive) has just opened for business. Under the direction of Jonathan Borwein, this new lab is located on the fourth floor of the Faculty of Computer Science and supports an "advanced collaborative environment" where display technologies, next generation input technologies, and wireless networking combine to enable highly collaborative and

distributed real-time interactions to take place. D-Drive has been funded by the Canada Foundation for Innovation (CFI). The use of such technologies also permits the easy meshing of high performance computing into research interactions.

The core use of the space is on highly mathematical and scientific tasks, for example, research collaborations between university faculty, research collaborations between universities and industry, and research analysis of mentoring and teaching interactions within and between

universities and schools. Necessary mathematical OCR tools and software have been installed or are being acquired.



One central feature of the laboratory is the large (60 and 72 inches diagonal) tiled multi-touch sensitive, high-resolution display panels that permit users and researchers to interact directly with the panels rather than through the usual keyboard or mouse. In addition, there are a variety of stereo visualization devices and multicast AccessGrid capacity for computing and grid collaboration. A proportion of the budget is earmarked for a refresh of equipment in this



rapidly changing period. An Apple G5 computer cluster and a file server is being installed to explore cost effective computation and to serve visualizations to remote sites.

Wireless will be installed to permit laptops and other devices to be integrated dynamically into the room so that those devices become an integral part of the environment. Corresponding networking components will be installed to permit additional devices such as cell phones, pagers, and hand-held organizers to be integrated into the environment, or used remotely.

Various other input and output devices will be installed. Additionally, the laboratory will contain various pieces of video equipment so that the use of the facility may be captured and studied. This will also allow for production of video output to aid dissemination of research findings and to enhance distance collaboration and distributed visualization.

Please visit our website at www.cs.dal.ca/ddrive or call us to arrange a visit or demo.

CHEBUCTO COMMUNITY NET

The Chebucto Community Net is now in its eleventh year of operation, thanks in no small part to the continuing support of the Dalhousie University Department of Mathematics and Statistics, Dalhousie University itself and the seemingly tireless efforts of a corps of dedicated volunteers.

It has been a challenging year to be a community net. There are no television ads promoting community nets or the community net ideal, no press coverage to help inform people what a community net is; in fact, no government support at all in any form. A community net is expected to cover its own costs, keep up with technology in a highly competitive environment, attract new members and conform to ever higher public expectations about levels of service. This year, once again, the Chebucto Community Net has managed to do all this and to maintain sufficient financial reserves to ensure its continuing existence for years to come.

Other community nets in Ontario, Alberta, Saskatchewan and Manitoba have folded. All across Canada, volunteer-run agencies of all kinds are finding that people are busier than ever with their lives and are finding fewer hours to volunteer. The near future for community nets in general looks to be at least as challenging as the past year, if not more so.

So what is a community net? One common perception is that a community net is simply cheap internet access. It is true that getting low cost internet access is one reason for people to sign up with a community net, but it is only one part of the picture.

Community nets also provide free and low cost web page hosting and other internet services, an online home if you will for people and groups sharing information with the local community and the world.

A community net is also like a rural onramp to a superhighway, a place where people can get up to speed in a safe environment before moving out into the rushing traffic. In most urban centers including Halifax which were fortunate enough to have their own community net, the vast majority of government and public websites were originally hosted by the community net's servers.

The biggest thing that a community net is, is a community. We are here to help our neighbours, who in turn help us and others. We're not a business, here to make money as our primary purpose. We're not a political party, here to forward an agenda. We're most like a co-operative, run by our members for the betterment of everyone, everywhere. Chebucto Community Net is Halifax's own community net, and we continue to provide free basic access to the internet, as well as low cost full service PPP dialup access with no catches. We're a home to a variety of cultural and information resources which are freely available to all. We are even home to small business entrepreneurs helping with the local community's economic life. And as anyone who has seen us helping out in the Chebucto office with someone's computer after hours can verify, we're here to help people who would otherwise have been unable to enjoy the simple pleasure of emailing distant family.

In the coming year, Chebucto Community Net will be providing even more new services to the public while continuing to support and update our existing service offerings. We will be offering new ways for people unable to afford our current PPP access to get online. And above all, we will be here continuing to help bridge the famous digital divide.

Our community is online here. Right here.

Statistics Workshop on Spatial/Temporal Modelling for Marine Ecological Systems

A workshop entitled "Spatial/temporal modeling for marine ecological systems" workshop will be held August 17-19, 2005 at Dalhousie University (immediately following the Christopher Field Retirement Symposium). The workshop is being organized by Michael Dowd, Chris Field and Joanna Mills-Flemming. Its purpose is to bring together researchers in statistics and marine ecology interested in the development of models for the analysis of the complex temporal/spatial data now emerging. These data include, for example, animal tracking data, as well as time series of biological variables from ocean observing systems. The

goal is to facilitate the identification of appropriate statistical methods and modeling approaches to address outstanding research questions. Sponsorship has been provided by the National Program on Complex Data Structures, the Sloan Foundation, and the Atlantic Association for Research in the Mathematical Sciences.

SUMMER CAMPS

CANADIAN MATHEMATICAL SOCIETY (CMS) CAMP

by Dr. C.C.A. Sastri and S. Sikka

The department held a math camp, from the 5th of July to the 9th, 2004 for bright high school students from all over Nova Scotia. It was sponsored by the Canadian Mathematical Society (CMS) as well as Dalhousie and was the fifth such camp. Twenty students - 13 boys and 7 girls – representing almost all the regions of the province attended. The instructors were mostly faculty members at Dalhousie or St. Mary's University, the exception being Richard Hoshino, a graduate student at Dalhousie. Richard is indeed exceptional in the sense that he not only started two outreach programs at Dalhousie – "Nova Scotia Math League" and "Math Circles" – but has also had lots of experience with math camps, having attended and conducted camps at Waterloo and London. By all accounts, the camp was a success.

The camp had both academic and non-academic components. In the academic part, there were daily lessons in which the students were introduced to new ideas and techniques. There were also problem solving sessions. Computers played a big part; they were used to learn Maple (the symbolic manipulation package), geometry, and statistical simulation. In addition, the students learned how to print some of the work they had done on T-shirts. They thoroughly enjoyed that activity, and the individualized T-shirts looked beautiful. The non-academic activities included bowling, chess, a pizza party, etc. A visit to Shakespeare by the Sea had been scheduled but had to be cancelled because of bad weather, even though a rain date had been chosen – it rained on both days! We are hoping for better weather next time.

The camp received financial support from Dalhousie and the CMS; the latter itself received support from, among others, NSERC PromoScience and ESSO. The organizers of the camp were, as before, Chelluri C.A. Sastri and Suraj Sikka.

MATH CAMP FOR BLACK STUDENTS

Report by Dr. R.P. Gupta

The thirteenth mathematics camp for black students was held in the second week of July 2004. The camp was organized by the Department of Mathematics and Statistics and the Black Educators Association of Nova Scotia. Thirty-four (18 girls and 16 boys) students were selected to attend the camp from schools all over Nova Scotia. The aim of the camp was to generate interest in mathematics and statistics, so that these students can pursue further studies with enthusiasm and appreciation of these subjects. The students, generally from grades six and seven were brought to the Dalhousie campus and accommodated in Howe Hall. Mornings and early afternoons were devoted to lectures and mathematical, statistical and computer activities, while late afternoon and evenings were devoted to extra curricular activities where they could apply the talents learned in the classes and practice them. They were taken to Dalplex for one hour each afternoon for swimming and games like basketball, tennis, etc. They also visited the Nova Scotia museum of history and science as well as the Discovery Centre. Students of the Camp also spent one evening in the Black Cultural Centre in Dartmouth where they were told about the mathematicians and scientists of black origin and a film was shown. The students were taught and cared for by six instructors (three university professors and three school teachers) and five chaperones. 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 a NSERC promo science grant, Dalhousie University and the BEA.

AARMS SUMMER SCHOOL

by Tony Thompson, Renzo Piccinini,
Summer School Directors.

This summer there will be a lot of activity in the Chase building. In addition to the Math Camps which have been running for several years, this year the AARMS (Atlantic Association for Research in the Mathematical Sciences) summer school will move to Dalhousie. It was hosted by Memorial University for the last three years.

It is a four-week, intensive programme for senior undergraduate and beginning graduate students and will run from July 17 to August 14. About 40 students will be here

from a wide variety of different countries (so far there are 11 on the list). Each student will take two of four possible courses; these are:

1. Convexity and fixed point algorithms in Hilbert space, by Heinz Bauschke from Guelph.
2. Integral geometry of convex bodies and polyhedra, by Daniel Klain from the University of Massachusetts in Lowell.
3. The mathematics of finance, by Wolfgang Runggaldier from the University of Padova.
4. Mathematical statistics, by Bruce Smith from Dalhousie.

We are very excited at the prospect of having a lively group of students here for that month and hope that everyone in the department will both help to make them feel welcome and enjoy their company.

APPLIED MATHEMATICS/HUMAN PHYSIOLOGY RESEARCH

by Dr. J.C. Clements

The Applied Mathematics/Human Physiology research group continues to receive strong funding support from NSERC (Science and Engineering Canada) in the form of Discovery and Collaborative Health Research Projects grants and was recently awarded a new Canadian Institutes of Health Research (CIHR) grant. The research programs of students in the group are quite varied and involve a high level of mathematical analysis. John Fitz-Clarke (MD, PhD) is continuing his doctoral thesis research on cardiac dynamics and heart arrhythmias. Denis Falvey (MD, MSc, PhD cand.) is pursuing an interdisciplinary research program which involves the disciplines of mathematics, ophthalmology, electrophysiology and neuroscience and proposes to address the problem of identifying and localizing retinal ischemia using three approaches to analyse ERG (electroretinogram) data: (i) wavelet theory (ii) nonlinear dynamics theory and (iii) computational neuroscience. Josh MacArthur (MSc cand.) is studying the application of invariant theory (from Differential Geometry) and wavelet analysis to the characterization and interpretation of physiological data. Jeffery Praught (MSc cand.) is working on the development of comprehensive mathematical models for simulating human heart dynamics. Garrett Maclean (MSc cand.) is working on mathematical techniques for noninvasively generating heart surface electrograms from body surface potential maps (heart scan). Clyde Clements (PhD cand.) has completed his thesis "Mathematical Simulation of Propagated Electrical Excitation in the Human Ventricular Myocardium" for his PhD degree. Graduate supervisors in the group include Professors John Clements, Milan Horacek, David Iron,

Roman Smirnov, Keith Taylor and Francois Tremblay. Topic areas related to the groups' research include mathematical modeling, analysis (wavelet theory), dynamical systems and differential geometry, ordinary and partial differential equations and numerical analysis.

HONOUR SEMINAR TALKS

by Dr. Jason Brown

Honours Seminar talks were held on Wednesdays from 12:30 - 1:30p.m.

Wednesday, January 5, 2005

Dr. R. Nowakowski

Integers, Fractions, Infinitesimals, Even Smaller Infinitesimals, Threats, Even Smaller Threats: Values the Game Theorist Must Know.

Wednesday, January 12, 2005

Dr. J. Janssen

The Infinite Web

Wednesday, January 19, 2005

Dr. R. Milson

Let's Go for a Drive: A Kinematic Metaphor for the Differential Geometry of Plane Curves

Wednesday, January 26, 2005

Dr. J. Borwein

Philosophical Implications of Experimental Mathematics

Wednesday, February 2, 2005

Dr. J. Clements

Do You Know Enough Linear Algebra to be of Use in the Real World?

Wednesday, February 9, 2005

Dr. P. Keast

What to do till the Numerical Analyst Comes OR Integrate This!

Wednesday, February 16, 2005

Dr. K. Taylor

The Wavelet Transform: One Shape Suffices for All Signals

Wednesday, March 2, 2005

Dr. S. Swaminathan

Mathematicians, Medals, Meetings and All That

Wednesday, March 9, 2005

Shannon Ezzat

Musical Scales and Mathematics

Bob Garrish

A Survey of Point Distribution Methods on the Sphere and Other Surfaces

Wednesday, March 16, 2005

Sable MacKeil

Sowing Games in Game Theory

Marc Humber

Conflict Resolution in Multi-Aircraft Conflict Situations

Wednesday, March 23, 2005

Rania Hussain

Math Applications in Chemistry

Garrett MacLean

The Ill-Posed Heart

Wednesday, March 30, 2005

Matt Donaldson

Parameter Estimation

Timothy Caley

Polynomial Invariance in Crystallographic groups

Wednesday, April 6, 2005

Christy Cameron

Mathematics Behind Perception in Music

Sarah Young

The Frank XYZ Lead System as Predictors

GRADUATE STUDENT SEMINAR

by Jin Yue

Chair, Graduate Student Seminar and
Vice President, Graduate Student Society

The Graduate Student Seminar is a regular event organized by the Mathematics and Statistics Graduate Student Society. It is one of the major departmental seminars that combines all areas of interests in both mathematics and statistics. The goal of the seminar is to provide a forum to promote scholarly communications among graduate students, and between graduate students, PDFs, faculty, and visitors. Graduate students, both in mathematics and statistics, are strongly encouraged to attend and speak in this weekly

seminar. It is an integral part of our department's graduate program.

Over the 2004-2005 academic year, we had an impressive number of talks, some by graduate students, postdoctoral fellows, and some by faculty and visitors. We wish to thank all speakers who contributed to the success of our Graduate Student Seminar. We also appreciate Roman Smirnov suggesting two of his visitors (Larissa Lorenz and Giovanni Rastelli) to give talks in the Fall.

A List of the speakers for the 2004-2005 academic year:

2004-2005 Fall

- (1) Jonathan M. Borwein, *Maximum Entropy Methods for Inverse Problems*, September 29, 2004.
- (2) Giovanni Ratelli (University of Turin, Italy), *Integration by Separation of Variables of the Hamilton-Jacobi Equation: The First 100 Years of the Levi-Civita Criterion*, November 17, 2004.
- (3) Larissa Lorenz (University of Waterloo and University of Jena), *Short Distance Modifications in Inflation and The Quest For The Right Vacuum*, December 01, 2004.

2004-2005 Winter

- (1) Richard Hoshino, *Roots of Independence Polynomials*, February 02, 2005.
- (2) S. Swaminathan, *Hilbert's Problems I*, February 11, 2005.
- (3) Joey Latta (Joint with Relativity Seminar), *Phantom Cosmology*, February 16, 2005.
- (4) Joshua MacArthur, *Solving Linear Systems of First Order PDEs*, February 18, 2005.
- (5) S. Swaminathan, *Hilbert's Problems II*, February 28, 2005.
- (6) David Iron, *Stability and Dynamics of Multi-spike Solution*, March 04, 2005.
- (7) Steven Noble, *p-adic Tools Involved in the ABC-Conjecture*, March 11, 2005.
- (8) Yanjing He (Joint with Relativity Seminar), *Self-similar Spherically Symmetric Cosmological Models*, March 16, 2005.
- (9) Sigbjorn Hervik, *Symmetries and Lie groups*, March 21, 2005.

- (10) Jeffery Praught, *Hormonal Effects on Glucose Regulation*, April 01, 2005.
- (11) Jin Yue, *The Gauss-Bonnet Theorem*, April 11, 2005.

2004-2005 Summer

- (1) Richard Wood, *Adjoint Functors*, May 04, 2005.
- (2) Robert Milson, *Algebraic Solutions of the Schrödinger Equation*, May 18, 2005.
- (3) Pat Keast, *Integration over the Hypercube Using Lattice Methods*, May 26, 2005.
- (4) Jihua Wu, *Some Problems about t Distribution, Dirichlet Distribution and F Distribution*, May 30, 2005.
- (5) Steven Noble, *Newton Polygons and Irreducible Polynomials*, June 01, 2005.
- (6) Huaichun Wang, *Quantifying Codon Usage Bias of the Genes*, June 8, 2005.
- (7) Caroline Adlam, *The Kepler Problem and Superintegrability*, June 15, 2005.
- (8) Paul Sheridan, *Distance Methods for Phylogenetic Tree Estimation*, June 22, 2005.
- (9) Le Bao, *Model Based Clustering Among Codon Sites*, June 28, 2005.
- (10) Geoff Cruttwell, *The Game of Go*, July 11, 2005.
- (11) C. C. A. Sastri, *Unobserved Outcomes and Unobserved Probability*, July 15, 2005.
- (12) Michael Dowd, *Fitting Dynamic Models to Data*, August 16, 2005.
- (13) Garbor Lukacs, *Introduction to Topological Groups*, August 22, 2005.

For more information about Dalhousie Math/Stats Graduate Student Seminar, please visit our website:

<http://www.mathstat.dal.ca/~msgrads/seminar.html>

MATHEMATICS COLLOQUIUM

by Dr. Roman Smirnov

An active Mathematics Colloquium program continued throughout the 2004/05 academic year. The Colloquium

features both outside speakers and Dalhousie faculty/long term visitors who lecture on their latest research or present overviews of the areas of Mathematics that they are experts in. A Mathematics Colloquium website was set up in January 2005. It can be accessed via the following link.

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

The website contains the guidelines for the Colloquium speakers, the information about past and upcoming Colloquia as well as links to relevant articles on the art of giving a good Mathematics Colloquium (for example, "How to give a good colloquium?" by J. E. McGarthy). The following is a list of speakers, their affiliations and the titles of their talks. Local hosts are given in parenthesis.

July 29, 2004, J. Griggs (Nowakowski), University of South Carolina, *Labelling Graphs with Distance Conditions: An Overview*.

August 9, 2004, V. Matveev (Smirnov), University of Freiburg, *Projective Lichnerowicz-Obata Conjecture*.

October 4, 2004, E. Kaniuth (Taylor), University of Paderborn, *Spectral Synthesis in Group Algebras*.

October 14, 2004, K. G. Stolarsky (Dilcher), University of Illinois, *The Discriminant: Your Guide to Equation Solving, Distance Geometry, and Number Theory*.

October 21, 2004, M. Fels (Milson), Utah State University, *An Introduction to Moving Frames*.

October 24, 2004, M. Fels (Milson), Utah State University, *Some Geometric Problems in Differential Equations with Symmetry*.

November 29, 2004, S. Hervik (Coley), Dalhousie University, *Homogeneous Spaces, Cosmology, and Dynamical Systems*.

January 13, 2005, J. T. Horwood (Smirnov), Cambridge, *Invariant Classification of Orthogonally Separable Hamiltonian Systems in Euclidean Space*.

January 17, 2005, Bin Han (Taylor), University of Alberta, *Construction and Applications of MRA Wavelet Frames*.

January 27, 2005, J. F. Williams (job interview), University of Leiden, *Adaptive Strategies for the Numerical Simulation of PDE with Finite-time Singularities*.

February 7, 2005, C. Stoica (job interview), Imperial College, *Relative Equilibria in Systems with Configuration Space Isotropy*.

February 10, 2005, T. Kolokolnikov (job interview), Free University of Brussels, *Localized Patterns in Reaction-diffusion Systems*.

February 14, 2005, F. Lutscher (job interview), University of Alberta, *Invasion and Persistence in Flow-through Systems*.

March 7, 2005, M. Chamberland (Borwein/Dilcher), Grinnell College, *Jacobian Conjectures: Flows and Maps*.

March 14, 2005, W. Miller, Jr. (Smirnov), University of Minnesota, *Second-order Superintegrable Systems*.

March 28, 2005, W. C. Lim (Coley), Dalhousie University, *Asymptotic Dynamics of PDEs in ODE-like Regimes*.

March 31, 2005, R. Corless (Keast/Miur), University of Western Ontario, *Automatic Generation of Compact Finite Difference Formulae*.

April 7, 2005, D. Borwein (Dilcher), University of Western Ontario, *A Century of Tauberian Theory*.

On April 8, 2005 Joshua MacArthur (who is currently working on his Master degree) has given a guest lecture (*The Method of Characteristics: Theory and Practice*) in MATH4753, a course in Partial Differential Equations taught in the Department of Mathematics and Statistics at Acadia University.

THE STATISTICS COLLOQUIUM by Dr. Hong Gu

In the past year, the statistics colloquium has served as an important stimulation to the research within the statistics division, and provided opportunities to increase the contact between statistics division and other disciplines both locally and internationally. It has also been one of the best learning opportunities for our graduate students. A list of all the talks given from June 2004 to May 2005 in the statistics colloquia is given below.

June 16, 2004, Joanna Mills-Flemming
Modeling Peak Accelerations from Earthquakes

June 17, 2004, Sandra Gardner, University of Toronto
Change Point Models for Modeling Discontinuation Rates of Pneumocystis Carinii Pneumonia Prophylaxis in an Ontario HIV Patient Population

July 5, 2004, Shoja Chenouri, University of Waterloo
Multivariate Robust Nonparametric Inference based on Data Depth

July 7, 2004, Gulhan Alpargu, University of Massachusetts
Robust TDT for Incomplete Genotypes

July 22, 2004, Olivier Renaud, University of Geneva
A Framework for Modelling on a Multiscale for Prediction and State-Space Filtering

August 3, 2004, Eva Cantoni, University of Geneva
Robust methods for GLM and GEE modeling

August 5, 2004, Chon Loredó-Osti, McGill University
Mixtures, frailties and the segregation of time-to event traits

Sept. 28, 2004, David Cole, University of Toronto
Genetics is the science of inheritance

Sept. 30, 2004
An introduction to the research areas of the faculty (1)

Ed Susko, 10 minutes

Mike Dowd, 10 minutes

Chris Field, 10 minutes

David Hamilton, 10 minutes

Christophe Herbinger, 10 minutes

Oct. 7, 2004
An introduction to the research areas of the faculty (2)

Joe, Bielawski, 10 minutes

George Gabor, 15 minutes

Bruce Smith, 10 minutes

Keith R. Thompson, 10 minutes

Hong Gu, 10 minutes

Oct. 21, 2004, Christopher Field, Dalhousie University
Robustness Issues in Models for Molecular Evolution

Nov. 4, 2004, Yulia Kotlyarova, Dalhousie University
Robust kernel estimator for densities of unknown smoothness

Nov. 5, 2004, George Yuan, Financial Risk Management, KPMG LLP (USA)
The Challenges of Modern Financial Risk Management, and Responses

Nov. 18, 2004, 2 hour workshop, Hugh Chipman, Acadia University
A detailed look at Bayesian Additive Regression Trees (BART)

Nov. 25, 2004, Matthew Spencer, Dept. of Math. and Stat. and Dept. of Molecular Biology and Biochemistry, Dalhousie University
Modelling the evolution of gene content

Dec. 2, 2004, Michael Dowd, Dept. of Math. and Stat., Dalhousie University
Particle Filters for Nonlinear Dynamic Systems

Jan. 27, 2005, Chris Field, Dept. of Math. and Stat., Dalhousie University
Variable Selection both Practical and Conceptual

Feb. 3, 2005, Ying Zhang, Dept. of Math. and Stat., Acadia University
Computer Algebra Derivation of the Bias of Commonly-Used Time Series Estimators

Feb. 10, 2005, Huaichun Wang, Dept. of Math. and Stat.,
Dalhousie University
The effects of DNA compositional bias on genome evolution

Feb. 21, 2005, Mu Zhu, Department of Statistics and
Actuarial Science, University of Waterloo
*A Computationally Efficient Approach for Statistical
Detection*

March 3, 2005, Kuan Xu, Department of Economics,
Dalhousie University
*U-Statistics and Its Asymptotic Results for some Inequality
and Poverty Measures*

March 10, 2005, Ransom A. Myers (RAM), Killam Chair of
Ocean Studies, Department of Biology, Dalhousie
University
*How to count the fish in the sea: Statistical Problems in the
Census of Marine Life*

March 24, 2005, J.P. Bielawski, Department of Biology and
Dept. of Math. and Stat., Dalhousie University
Phylogenetic methods for detecting molecular adaptation

March 31, 2005, Matthew Spencer, Dept. Mathematics and
Statistics and Molecular Biology and Biochemistry,
Dalhousie University
*Markov models for coral reef communities: discrete or
continuous time?*

Apr. 7, 2005, Connie Stewart, Dept. Mathematics and
Statistics, Dalhousie University
*Inference on the Diet of Predators Using Fatty Acid
Signatures*

Apr. 21, 2005, Krista Collins, Dept. Mathematics and
Statistics, Dalhousie University
*Examining the periodicity in DNA and Amino Acid
sequences using the spectral envelope*

BRAIN TEASERS

Edited by
Dr. S. Swaminathan

(1) Identify these two words in which each asterisk marks a
missing letter: B*R*A*I*N and *B*R*A*I*N.

(2) Agnes loves olives. The tin she has found in the
cupboard certainly contained green olives and black olives
to begin with, but someone evidently got to it before Agnes
did and ate a number of them. The first seven olives Agnes
now removes at random from the tin all turn out to be green.
The probability of this happening is exactly 50-50. Given
that, what can you expect of the colours of the remaining
seven olives?

SWAMI'S PICTURE 1

SWAMI'S PICTURE 2

CHASE REPORT

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We welcome your suggestions and comments
for future issues.

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