

## Mathematical and Statistical Sciences



### Message from the Chair

ATM Lau

I would like to congratulate our colleagues who have received awards and honors during the last few months:

- Dr. John Bowman has been awarded a Delta Chi Fraternity Teaching Award.
- Dr. K.C. Carrière has been awarded an Alberta Heritage Foundation for Medical Research Health Science for 5 years starting July 1, 2005.
- Dr. Terry Gannon has been awarded a Humboldt Research Fellowship (for 40 and under) at the University of Hamburg.
- Dr. Sam Shen has been awarded the McCalla Professorship 2005-06.
- Dr. Mazi Shirvani is the winner of this year's Rutherford Award for Excellence in Undergraduate Teaching. This is the most prestigious teaching award given by the University.
- Dr. Gerda deVries is the winner of the 2004-05 Faculty of Science Award for Excellent Teaching.

Congratulations to all of you!

Dr. Hans Brungs and Dr. James Muldowney will be retiring as of June 30, 2005. Dr. Bruce Allison will also be retiring as of September 1, 2005. Dr. Allison will be on half time until August 31, 2007. Thank you Hans, James and Bruce for the many years of outstanding academic career in both research and teaching as well as service to the Department.

Dr. Ivan Baggs and Dr. Ted Lewis have been awarded Professor Emeritus status

by the University. Congratulations Ivan and Ted for your years of truly outstanding teaching and service to the Department and the community.

The Christmas Party held in December 2004 at the Santa Maria Goretti Community Centre was a great success. I would like to thank Rick for organizing this important social event. Rick has already booked the Centre for this coming December.

The annual B-B-Q has been set for the afternoon of Saturday, September 10<sup>th</sup>, 2005. I look forward to seeing you all there.

Wishing you all a happy and fruitful summer.

#### INSIDE THIS ISSUE:

Associate Chair of Research	2
Associate Chair of Graduate Studies	2
Centre for Mathematical Biology	3
AMI	4
APO Report	5



## Associate Chair of Research

### PM Hooper

The Awards committee has prepared several nominations this year and is continuing to work on others. Some results are still pending. Department members are encouraged to suggest names of potential nominees and awards.

Congratulations to Sam Shen for the 2005 McCalla Professor award and to KC Carriere for the five-year AHFMR Health Scientist award.

Shelley Williamson, administrative secretary for research, moved to a position elsewhere in the university at the beginning of January. My thanks to Shelley for her work last fall, especially on NSERC applications, and to the remaining office staff for filling in this term.



## Associate Chair of Graduate Studies

### YS Wong

The Graduate Office conducted a graduate survey in the Fall term. The survey was given to all current graduate students. We are pleased to note that most students are satisfied with their education experience in their graduate program, funding and facilities. Based on the possible rankings range from one to five, with one indicating a negative response and five signifying a positive response, the median scores on the two key questions: (#1) "Overall, I am happy with my choice to study in the department" (Response 3.9) and (#2) "Overall I am satisfied with my graduate program" (Response 4.1)

Due to the success of the first Young Researchers' Forum in Mathematical and Statistical Sciences which was organized by the Graduate Office in March 2004, a second meeting will take place at the University of Calgary April 16-17, 2005. About forty students from our Department will be participating in this event. We are looking forward to having another successful Forum this year.

This is the busy time for recruitment of new graduate students. Despite the introduction a \$100 application fee this year, we have received as many applications as in previous years. To date the Graduate Office has sent out 39 offers, and 7 have declined. Among the remaining 32 offers, 19 have been given to Canadian/Permanent Residents, and 13 international students. As for the areas of graduate studies, 9 in Pure Math, 9 in Statistics & Probability, 6 in Applied Math, and 7 in Math Finance & Actuarial Science. Due to limited graduate funding and office space, many strong applicants with excellent academic records were not considered.

The Faculty of Graduate Studies and Research established a process for external reviews of graduate programs and research in 1994. The Department completed its first five-year review covering the academic years 1993/94 - 1998/99 in April 1999. The second five-year review covering the academic years 1999/2000. 2003/2004 will be carried out in May this year. The external review team consists of Dr. Richard Kane (Mathematics, University of Western Ontario), Dr. David Brillinger (Statistics, University of California, Berkeley) and Dr. Clarence Capjack (Electrical & Computer Engineering, University of Alberta). The review team will visit our Department on May 5 & 6, 2005.

#### Graduate Students Awards

##### Pundit Sharma Award

Ms Elan Dagenais

Ms Jiayuan Lu

Mr. Qianglong Wen

##### Graduate Student Teaching Award

Ms Mary Beisiegel

Ms Andria Dawson

Ms Rosana Fok

Ms Elizabeth Powell

## Centre for Mathematical Biology

M. Lewis, Director

The Centre for Mathematical Biology promotes research in Mathematical Biology at the University of Alberta through its interdisciplinary researchers, visiting speakers, and workshops. Below is a brief update since Spring 2004.

Four new members have joined the CMB: Carline Bampfyld, a Wain International Travel Fellow from University of Oxford, is studying "Ecological forecasting and risk analysis of nonindigenous species", focusing on the Great Lakes fresh water ecosystem in North America; Weide Li, a Visiting Scholar from Lanzhou University in China, is also joining the Great Lakes project until the end of 2005; Hannah McKenzie, a new graduate student (interdisciplinary Biological Sciences/Mathematical and Statistical Sciences), is studying carnivore movement; and Bill Nelson, a postdoctoral research fellow formerly from University of Calgary, is studying Mountain Pine Beetle modeling. In April Bettina Greese, a student from University of Greifswald, Germany, will join her Diploma Thesis co-supervisors Thomas Hillen and Gerda de Vries for six months. Welcome all!

Congratulations to Joanna Renclawowicz, former PIMS postdoctoral fellow, on her position at the Polish Academy of Sciences. Congratulations to Frithjof Lutscher who has accepted a faculty position at the University of Ottawa starting in the Fall of 2005. And finally congratulations to Mark Duller, who thankfully won't be far away as he has accepted a permanent Systems Analyst position within the Department of Mathematical and Statistical Sciences.

Further News: CMB Faculty member Gerda de Vries was awarded the Faculty of Science Award for Excellent Teaching.

### Researchers

A paper by Ph.D. graduate student Marty Krkosek, Mark Lewis, and John Volpe (Victoria), entitled "Transmission dynamics of parasitic Sea Lice from Farm to Wild Salmon," recently published in the Proceedings of the Royal Academy of Science, London B, was front-page news in the Globe and Mail and garnered much other interest by the media (see <http://www.math.ualberta.ca/~mlewis/publications/SeaLicePub.htm>).

### Visiting Speakers

Members of the CMB hosted 12 visitors over this past year to encourage research collaborations. Of particular note was PIMS Distinguished Speaker Roger Nisbet (University of California, Santa Barbara) who gave a series of talks at 3 Canadian universities. Long-term visitors include: Christina Cobbold (University of Glasgow), Birgitte Schoenfish (University of Tuebingen), Bettina Greese (Greifswald, Germany), and Weide Li (Lanzhou University, China). Most CMB visitors also presented seminars at the PIMS-MITACS

Mathematical Biology seminar series (see [http://www.math.ualberta.ca/~mathbio/seminar/2004-2005\\_Seminars.html](http://www.math.ualberta.ca/~mathbio/seminar/2004-2005_Seminars.html)).

November 15: Dr. Karl P. Haderler, University of Tubingen, *Persistence of fungal endophytes in grass populations*.

November 22: Dr. Marjorie Wonham, PDF University of Alberta, *Temporal increases in biological invasions: using models to distinguish among mechanisms*.

November 29: Mr. Piotr Weclaw, PhD student, University of Alberta, *Practical application of a computer simulation model in ecological conservation*.

December 1: Dr. Jorge Velasco-Hernandez, Mexican Petroleum Institut, *Modeling biofilm structure and growth dynamics* (Special Joint lecture with DE and Dynamics Seminar).

December 6: Dr. Abba Gumel, University of Manitoba, *Mathematical approaches for assessing potential impact of HIV vaccines*.

### Winter 2005

January 17: Dr. Kevin Hall, National Institutes of Health, *Mathematical modeling of in vivo human energy metabolism and the regulation of body composition*.

February 7: Dr. Thomas Hillen, University of Alberta, *Modeling with coupled systems and quiescent states*.

February 28: Dr. Caroline Bampfyld, Wain International Travel Fellow, University of Alberta, *Mathematical modeling of rain forest regeneration dynamics: A case study in Sabah, Malaysia*.

March 7: Mr. José Candelaria, PhD student, University of Iowa, *Construction and analysis of two habitat specific dispersal models*.

March 14: Dr. Erik Noonburg, PDF University of Alberta, *Cervus elaphus, quo vadis? A game theoretic approach to modeling elk movement patterns in Yellowstone National Park*.

March 21: Dr. Cailin Xu, PDF University of Alberta, *Seasonality and population cycles: forced prey growth or forced functional response?*

April 4: Ms. Elaine Beltaos, PhD student, University of Alberta

April 11: Dr. Steve Cantrell, University of Miami, *Reversals of competitive dominance in ecological reserves via external habitat degradation*.



## Applied Math Institute (AMI) M. Li

At the end of the 2004 Fall Semester, the AMI council has adopted a three-year plan that aims at strengthening the role of the AMI and applied mathematics, facilitating interdisciplinary research, and promoting the Canadian Applied Mathematics Quarterly (CAMQ). Several new initiatives have been underway.

(1) The AMI website has a new design and content is being added continuously to better serve the members, the university community and the general public. (2) The AMI has launched a preprint series that publish members' research papers online and in print. Dr. T. Hillen is the Editor of the preprint series.

(3) CAMQ continues to grow and improve, thanks to the tireless work of Jack Macki and Bryant Moodie. At the present, both the editing and printing are done locally in Edmonton. Volume 11 is devoted to the G. J. Butler conference and is currently being printed. One issue of Volume 12 is devoted to reports of the PIMS' Industrial Problem Solving Workshop and will be printed in early May, 2005.

(4) Effort for the CAMQ online is well underway. The CAMQ website is being redesigned and expected to be fully functional during summer, 2005. All CAMQ table of contents and abstracts will be available online, pdf files of articles will be downloadable for subscribers.

(5) Jim Muldowney and Thomas Hillen are leading the charge of the AMI's effort to review the department's

curriculum in Applied Mathematics. They are expected to report their finding to the AMI council meeting at the end of April, 2005.

(6) Jointly with the PIMS (U of A), the AMI continues to manage the Syncrude Lecture Series. Dr. Bruno Eckhardt of the Philipps-Universitat Marburg, Germany, gave the 3<sup>rd</sup> Syncrude Lecture on January 21, 2005, titled "Transition to Turbulence in Shear Flows."

(7) The AMI Seminar series, under the coordination of Henry van Roessel, continues to be very active. A list of speakers since January 2005 is given below.

Graduate students in Applied Mathematics continue to be successful. Many of them have recently been recognized by major awards and scholarships. Among them are:

- Andria Dawson (Graduate Student Teaching Award)
- Elan Degenais (Josephine Mitchell Scholarship)
- Robert Field (NSERC Graduate Scholarship)
- Rosana Fok (Graduate Student Teaching Award)
- Masky Ng (NSERC Graduate Scholarship)
- Joshua Nault (NSERC Graduate Scholarship)

## Differential Equations and Dynamics Seminars

### M. Li

- November 10, 2004, Michael Li, U of A  
Singular Perturbation Analysis of An Epidemic Model
- December 1, 2004, Jorge Velasco-Hernandez, Instituto Mexicano Petroleo, Mexico Modeling Biofilm Structure and Growth Dynamics
- Feb. 2, 2005, Michael Li, U of A  
Non-autonomous Differential Equations and Skew-Product Flows, I
- Feb. 9, 2005, Michael Li, U of A  
Non-autonomous Differential Equations and Skew-Product Flows, II
- Feb. 16, 2005, Michael Li, U of A  
Non-autonomous Differential Equations and Skew-Product Flows, III
- March 9, 2005, Wenxiang Liu, U of A  
On Zeroes of Some Transcendental Equations
- March 16, 2005, Qiang Wang, U of A  
On Milloux's Theorem
- March 22, 2005, Jens Rademacher, UBC  
The Absolute Spectrum for Wave Trains
- April 6, 2005, James Muldowney, U of A  
The Wronskians and Their Struggle for Independence



## APO—R Mikalonis Report From the Trenches, An Update

### Department Christmas Party

In our last Department Newsletter I was talking about the upcoming Department Christmas Party and how I hoped that the earlier date, being farther away from final exams, would allow more graduate students to attend and I am happy to report that this came to pass. We had 131 staff and students celebrating together and it was a great evening. The new location proved to be a good choice. The venue itself, the food, and the new DJ were big hits from the comments that I received and I am pleased to announce that we will be returning to the same place next year. A big thanks to all the staff who contributed in one way or another to the success of this event both prior to and during. It was a group effort.

### Administrative Personnel

In the area of administrative personnel we have continued to experience major changes. Rodney Knight, our part-time photocopier operator, had only been with us for a couple of months before he received an opportunity to return to the Population Research Laboratory in the Department of Sociology in a full-time capacity. Shortly after that Shelley Williamson was lured away to Dentistry/Pharmacy and while we were still catching our breath from that, one of our systems analysts, Scott Berard, announced that he was leaving for Calgary, of all places. In the meantime, Linda began a six week medical leave, Karen was out for two weeks as well during that time with some knee surgery, and shortly after Karen returned she too was offered a promotion to move to the Faculty of Education. That was 4 staff members in the course of about 4 months! Those poor exhausted staff who were just recovering from Leona's leave got no rest and continued with increased workloads. I have been avoiding mentioning names for fear of missing someone but I think it is appropriate to mention that Patti has been here through all the leaves and both Leona's and Linda's leaves laid a lot of extra responsibility on her shoulders. She deserves much thanks for her efforts. Dona has been here through it all as well and even though Leona's and Linda's leaves did not impact her as greatly as they impacted Patti, with Karen's leaving, her workload increased and we must not forget that she had already been working hard for many months on the Graduate Student Program Review documentation in addition to her full regular job.



Teamwork

That project is nearing completion. Vera, Elaine, and Larina have also taken on extra responsibilities as needed during this time to enable us to continue our departmental mission and we are grateful for their efforts. Both Linda and Leona put in extra work prior to their leaves to minimize the demands on their positions while they were gone and Leona has been extremely busy during winter term as we have been involved with recruiting, preparing job fact sheets and restructuring the administration group. This is truly an outstanding group of staff and I am very pleased to be a part of it. So where are we now. We have found an excellent replacement for Rodney Knight in Manuella Jenner as part-time photocopy operator and it looks like Mark Duller is going to be able to fill Scott Berard's shoes quite nicely. We are still in the process of finalizing position descriptions for Shelley's and Karen's positions. We hope to complete this soon so that we can begin recruiting for both those positions. We have incorporated the PIMS administrative secretary position into Dana's position and that required that we submit a job facts sheet for that position. We are waiting for feedback from Human Resources on that matter.

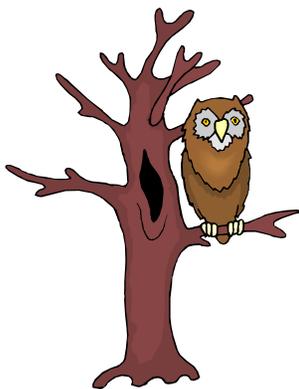
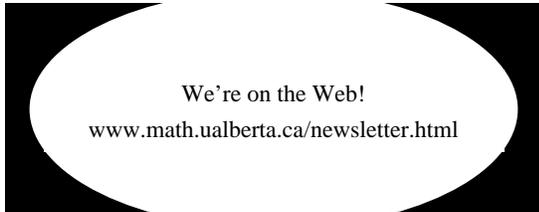
### Administration

After some wheeling and dealing with the Assistant Chair Administration at the Faculty of Science Office, it appears that our final budgetary position will not be as bad as it might have been as a result of the very large cuts that we experienced this year. We will still be in a deficit position of around \$50,000 but that is an improvement over the expected \$200,000+ deficit that we were facing a few months ago. Unfortunately, deficits get flexed forward into the new fiscal year. We wait with baited breath to hear what the grant from the Province will look like and what we can expect from year 4 (this year, 2005-06) of the 4 year budget reduction program.

On a happier note, it looks like Spring is here to stay this time and that means Summer is not far away. I wish you all an enjoyable and fun-filled summer with family and friends.

## Newsletter

V.Toth  
Editor  
Phone: 492-3394  
Email: vtoth@math.ualberta.ca



### Ask the Wise Old Owl

Dear Wise Old Owl:

I've over spent on my research grant and I am afraid to talk to Rick about it. What should I do?

Yours truly, Chicken

Dear Chicken:

Buy a ticket to South America!

### More Humour

A Professor walked into a library and said, "Can I have a burger and fries?"

The librarian said, "Sorry, this is a library."

So the Professor whispered, "Can I have a burger and fries?"