



Fall Winter
2004

Mathematical & Statistical Sciences Newsletter



Message from the Chair ATM Lau

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I would like to extend a warm welcome to our new academic staff, support staff, graduate students, post-doctoral fellows and visitors.

Dr. Vladimir Troitsky, our former PIMS post-doctoral fellow in Functional Analysis has been appointed as an Assistant Professor from July 1, 2004. Dr. Feng Dai also arrived in July 2004. He is our new Assistant Professor in Classical Analysis.

Ken Andersen has been appointed as Associate Chair (Undergraduate) and Peter Hooper has been appointed as Associate Chair (Research) for a 2 year term from July 1, 2004. I would like to thank K.C. Carrière for her outstanding service as Associate Chair (Research) for the last three years. I would also like to thank Ivan Baggs for delaying his retirement and serving as Associate Chair (Undergraduate) during 2003-04.

Ivan Baggs, Graham Chambers, Ted Lewis and Akbar Rhemtulla have taken retirement as of July 1, 2004. Ivan Baggs is now on half-time until June 30, 2005. Graham Chambers and Ted Lewis will be on half-time until June 30, 2006.

A number of our colleagues have received awards and honors during the past few months: Ivan Baggs was a recipient of the first Faculty of Science Service Award; Ron Bercov received an Alumni Honor Award; Gerda deVries was the winner of two teaching awards: Undergraduate Teaching Award for Instructors of Service Courses from outside the Faculty of Engineering and the first Department Award for Excellence in Teaching; Subbash Lele was elected as a member of the International Statistical Institute; Ted Lewis was a recipient of the Faculty of Science Teaching Award; Yanping Lin has been awarded a McCalla Professorship for 2004-05; Bryant Moodie was elected as a Fellow of the Wessex Institute of Technology in Ashurst, Southampton, U.K. in recognition of his leadership in engineering sciences; Arturo Pianzola was awarded a Killam Annual Professorship for an outstanding record in research, teaching and services; Sam Shen was appointed to a 10 member Advisory Committee to the Chinese Ministry of Science and Technology. He also was awarded an Honorary Professorship by the In-

stitute of Atmospheric Physics, Chinese Academy of Sciences. Congratulations to you all.

On December 2, 2004 Alfred Weiss will be honored at ceremony for 25 years of service at the University of Alberta. Congratulations Alfred and thank you.

I would like to thank the graduate students for coordinating the annual B-B-Q held at Hawrelak Park this past Fall. The B-B-Q was a great success.

This year's Christmas Party will be held on Saturday, December 4, 2004 in the Santa Maria Goretti Community Center. Please join us for an evening of good food and fellowship.



Associate Chair of Research

PM Hooper

I would like to thank K. C. Carrière for her efforts as Associate Chair (Research) over the past three years. The job description involves looking out for funding opportunities, overseeing research grant applications, and seeking nominations for research awards and prizes. Since July I have spent much of my time learning the ropes, so my report will be brief. The Research Committee again provided peer-review of NSERC applications. This year there were 15 applicants from our Department. Having previously read a good number of applications in statistics but few in mathematics, I found the review more enjoyable than expected. I was impressed by the strength and breadth of research among the applicants and by the quality of the research proposals. On behalf of the applicants, I thank the committee members for their many useful comments and suggestions.

The Awards Committee is continuing its work seeking nominations for various research awards. Dr. Lau lists recent awards in his message from the Chair, and I would like to add my congratulations for the recipients. I would also encourage faculty members to suggest names of potential nominees and/or awards.



Associate Chair of Graduate Studies

YS Wong

During the 2004-05 academic year, we welcomed 34 new graduate students to our graduate programs. Exactly half of the new students are in the MSc program, and the other half in the PhD program. Fifteen of the new students are Canadian citizens or permanent residents and the remaining are overseas students from China, USA, Mexico, Korea, Ghana, Ethiopia and Turkey.

Among the 34 new graduate students, we have four NSERC scholars, one FS Chia Scholar, and 10 have received Provost Doctoral Entrance Awards.

2004-05 NSERC Scholarship recipients:

- Nicolas Bouffard
- Elan Dagenais
- Jeremy Macdonald
- Hannah Mckenzie

2004-05 FS Chia Scholarship Recipient:

- Qingfang Dai

2004-05 Provost Doctoral Entrance Awards:

- Joseph Ansong
- Tom Holloway
- Robert Kipka
- Linglong Kong
- GuangRui Li

- Jia Li
- Yury Petrachenko
- Rocio Sotomayor
- Jie Sun
- Wei Alan Zhao

Two seminars were organized by GAME and the Graduate Office during the Fall term. In the first seminar, about ten faculty members gave a short presentation about their research work. The meeting was particularly useful to first year graduate students, and it provided a good opportunity for new students to meet with faculty members. At the second meeting, the Graduate Chair presented information and application procedures for various scholarships and awards offered by NSERC, FGSR and our Department. Both meetings were well received by our graduate students.

On a final note, I am pleased to announce that the Graduate Office (GO) and GAME have coordinated to publish the GO-GAME Newsletter. We hope that you will find useful information and feedback regarding our graduate programs through the Newsletter. The first GO-GAME Newsletter has already appeared on the web-site:

<http://www.ualberta.ca/~yauwong/gogame1.html>

We are currently establishing a permanent webpage for GAME, and the Newsletter will be moved to the GAME webpage in the future.



Applied Mathematics Institute (AMI)

M Li, Director

One of the major joint AMI/PIMS initiatives in 2004 is the Syncrude/PIMS/AMI Lecture Series. The lecture series was envisioned back in 2003 by Jack Macki, former AMI Director, and James Muldowney, former Site Director of PIMS, and is now fully sponsored by Syncrude Canada. The series will focus on mathematical problems related to the fundamental interests of Syncrude: fluid dynamics, fluid dynamics with heat transfer and turbulence, imaging related to assessment of ore bodies, and process control. The lectures will be given by distinguished mathematicians from around the world.

The inaugural Syncrude Lecture was given by Dr. Daniel D. Joseph, Regents Professor, IT Aerospace & Engineering, University of Minnesota, titled “*Fluid Dynamics of Particle Formation*,” on June 4, 2004. A reception for the inaugural lecture was attended by representatives from Syncrude, university ad-

ministration, and faculty members from mathematical sciences and engineering.

The second Syncrude Lecture was given by Dr. Roland Glowinski, Cullen Professor of Mathematics and Mechanical Engineering, University of Houston, on October 22, 2004. The lecture was titled “*Operator-Splitting Methods: Application to Continuum Mechanics and Geometry*.” About 50 people, including faculty members and graduate students, from the Faculties of Science and Engineering attended the lecture. Future lectures in the series will be coordinated by John Bowman.

An AMI Council Meeting will be held on November 23, 2004, during which some new AMI initiatives will be discussed. I expect to give a more detailed report in the next newsletter.



PIMS News

GH Cliff, Site Director

I have taken over from Jim Muldowney as U of A PIMS Site Director.

Currently the greatest portion of PIMS funds is funneled through Collaborative Research Groups (CRG). There is an ongoing CRG in Mathematical Ecology; this program is run at the U of A by Thomas Hillen, Mark Lewis, and Gerda de Vries. There has been a very successful undergraduate summer school in Math Biology, run for several years. There are also distinguished visitors, seminars, workshops, and post-docs funded by this program.

There is a CRG in Probability, based at UBC, but also with some funds available here at the U of A. Currently a distinguished visitor, Yaozhong Hu, of the University of Kansas, has been visiting us, hosted by Mike Kouritzin. Prof Hu's work also involves Math of Finance, Physics, and Analysis.

There is a CRG in Topology, also based at UBC. George Peschke has helped organize the Alberta Topology Seminar, which has had meetings in Edmonton, Calgary, and Banff.

There is an ongoing series of lectures sponsored by Syncrude, PIMS, and the Applied Math Institute.

PIMS also funds education initiatives. In October there was a two-day meeting here at the U of A, organized by Jack Macki, to discuss how calculus is taught at the various universities and colleges in Alberta. There were representatives from the U of Calgary, U of Lethbridge, as well as from Mount Royal College

in Calgary, Red Deer College, Grande Prairie College, Grant McEwen, Augustana, and King's University College.

At the elementary school level, there has been ongoing work on Math Fairs, largely run by Ted Lewis, and also by Andy Liu.

Current PIMS post-docs at the U of A are Frithof Lutscher and Joanna Renclawiwicz (Math Biology) and Suneeta Vardarajan (Mathematical Physics).

The PIMS post-doc competition for next year closes on Jan. 21, 2005. PIMS will pay \$20,000; an additional \$20,000 must be found, from individual NSERC grants or from teaching a course in our department. See the web site <http://www.pims.math.ca/opportunities/pdf.html>.

Department members are asked to think about applying for future CRGs. These are usually two-year programs with funds from \$50,000 to \$100,000 per year available for post-docs, distinguished visitors, workshops, seminars, and summer schools. The application deadline for this year has passed; for next year the deadline will likely be in mid November.

I would like to thank my predecessor, Jim Muldowney, for his work in making PIMS successful at the U of A; I would also like to thank Bryant Moodie who was acting Site Director before I took over.



APO R Mikalonis

Report From the Trenches

By the time this Newsletter gets out everything I have to say here will be old news but here goes anyway.

Administrative Personnel

For the last 3 years we have enjoyed a very stable and harmonious administration team for the most part.



Except for the regular changes to the part-time photocopier operator position, we have not had to recruit for any other position until this fall. Our receptionist, Jennifer Eichelt, chose to move to the Department of Computing Science and we were pleased that Larina Dolling, our part-time photocopier operator, agreed to assume this position. The transition has been smooth and it was great to have Larina available to train Rodney Knight, the new part-time photocopier operator. As a result Rodney was able to get up to speed very quickly and seems to be managing very well.

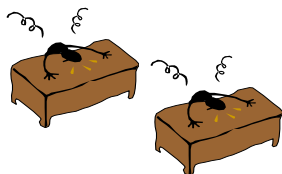
With Leona on a 6 week medical leave,



several of the admin staff have been shouldering an extra load to keep this place running.



A special thanks to them. We are looking forward to having Leona back on November 22.



Administration

Central Administration continues to “empower” us by downloading responsibility and cost to the Department Level. The latest moves involve responsibility for Research Grant Overexpenditures (if not cleared by year end they become a charge against department operating), Travel Advances (if not cleared by year end they also become a charge against Department Operating) and eTRAK, the new research grants website. Researchers will no longer receive a monthly statement of grant expenditures and ending balance. Researchers must go through e-TRAK to get this information for themselves and print their own hard copy.

Department Christmas Party

Yes Virginia, it’s getting close to that time of year again. We are only a few weeks away from the Department’s Annual Christmas Party which will be held on Saturday, December 4 this year. Hopefully the earlier date will provide our graduate students with a larger buffer between the party and final exams and more students will be able to attend. We are in a new location this year so don’t go running off to West Edmonton Mall. For details on the location, please take note of the posters that have been put up around the Department. We will have a great meal, lots of door prizes and an evening of dancing and visiting. You can get your tickets from Larina. Hope to see you all there.



Differential Equations and Dynamics Seminar

M Li

- Feb. 25, 2004, C.P. Caulfield (U of California, San Diego)
Rigorous bounds on mixing in stratified shear flows
- Mar. 03, 2004, Jasmine Hosne (U of A)
Convective and absolute instability in the incompressible boundary layer
On a rotating disk in the presence of a uniform magnetic field
- Mar. 10, 2004, Joanna Renclawowicz (UofA)
Singularity formation in chemotaxis Nagai's conjecture
- Mar. 17, 2004, Jack Macki (U of A)
The Peano existence theorem in infinite dimensional spaces
- Mar. 24, 2004, Michael Doebeli (UBC)
Adaptive speciation: theory and evolutionary experiments
- Apr. 02, 2004, Jens Rademacher (U Minnesota)
Homoclinic bifurcations from heteroclinic cycles with periodic orbits and tracefiring of pulse
- April 07, 2004, Jim Muldowney (U of A)
An intermediate-value property: applications to differential equations
- September 15, Michael Li (U of A)
Global Dynamics of a Staged-Progression Epidemic Model
- September 22, 2004, Guofeng Zhang (U of A)
Networked Control Systems: A Perspective from Chaos
- September 29, 2004, Qian Wang (U of A)
Dimension Problems for Linear Systems
- October 6, 2004, Thomas Hillen (U of A)
Dynamical Systems with Quiescent or Resting States
- October 13, 2004 Wenxiang Liu (U of A)
A Mathematical Model of Chemotherapy Treatment with Chronic Myeloid Leukemia.
- October 20, 2004, Arno Berger (University of Canterbury)
Between order and chaos: almost automorphic dynamics revisited
- October 27, 2004, Hongbin Guo (U of A)
Global Stability for a Latent Tuberculosis Infection (LTBI) Epidemic Model

4th Annual North-South Dialogue in Mathematics, Red Deer College, May 8-9, 2004

M Li

This year's meeting was held at the Red Deer College, Red Deer, Alberta, on May 8 and 9, 2004. The College Mathematics Meeting at RDC, on May 7 preceded it. Coordination among organizers of both meetings allowed several themes to begin on Friday and continue through the weekend. Many high school teachers also attended the meetings. This year's gathering addressed all levels of mathematics in Alberta from elementary school through postdoctoral research.

Since 2002, the North-South Dialogue has received full funding from the Pacific Institute of Mathematical Sciences (PIMS), through its ASRA/UC and ASRA/UA funds. Dr. Ivar Ekeland, the PIMS Director, was the keynote speaker at this year's banquet. Mathematicians from all across Alberta met at RDC. Travel assistance was available for college faculty members and graduate students. For a detailed report and recommendations from the panel discussions, see <http://www.math.ualberta.ca/~mli/north-south/report.pdf>.

Next year's North-South Dialogue is scheduled to be held on April 30 and May 1, 2005 at Grant MacEwan College.

B-B-Q Gathering



Holiday Gathering

Date: Saturday, December 4, 2004

Location: Santa Maria Goretti Community Centre
11050 90 Street
Edmonton, Alberta
Theatre Hall

Time: Cash Bar opens at 6:00 p.m.
Dinner commences at 7:00 p.m.
Prize draws will follow dinner
Music and Dancing to follow 9:00 - 1:00 a.m.

Ticket Prices:

\$15.00 per person for academic and retired staff and their guests

\$10.00 per person for sessionals, postdoctoral fellows, graduate students, support staff and their guests.

Note: Tickets are to be paid for in cash only and will be given out upon receipt of payment. They will be available from Larina Dolling in the Mathematical and Statistical Sciences Office, CAB 632.

We have seating for 150 so get your tickets early !

Deadline for purchasing tickets is November 26th



Newsletter

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We're on the Web!

www.math.ualberta.ca/newsletter.html

In Memory Of

The Department was saddened by the passing of Professor Emeritus Murray Seymour Klamkin on August 6, 2004, at the age of 83. His long and productive life was not solely devoted to academia. He had been equally successful in industry, spending more than a decade as the mathematical brain in Ford Motor Company. He was an acknowledged expert in the field of inequalities in general, and the Triangle Inequality in particular. He was arguably the best problem solver in the world, and he was perhaps the best known person in the mathematics competition circle. He had left his mark on every major mathematical journal that has a problem section. He was the long-time editor of the problem section in SIAM Review (Society of Industrial and Applied Mathematics, not Thailand). He was the Deputy Leader of the USA IMO team from 1975 to 1979 and the Leader from 1981 to 1984. He had served for many years on the USA Mathematical Olympiad committee and the Canadian Mathematical Olympiad committee, chairing the former most of that period. He had edited four problem books.

Halloween Fun

The 70's Era



Office Gals