



Newsletter

Spring 2006

Letter from the Director



I am delighted to write in this first of a series of quarterly newsletters to appear under the new management of AARMS. Let me start by thanking everyone, and especially Hermann Brunner, who has

worked so hard to place AARMS where it is today as a substantial regional institute in the mathematical sciences. My hope is that over the next few years - with the able assistance of Richard Wood (Associate Director) and David Langstroth (Administrator) --- we shall blossom into a recognized national and international institute.

To make this possible our first steps have been to redesign this news letter and the AARMS website while setting up support groups of five at each of MUN, UNB and Dal. Each of these groups contains a Statistician, a Computer Scientist and people interested in Educational and Industrial Outreach---so as to facilitate my commitment to enhancing the role AARMS can play in each of these settings while strengthening our communications network.

Over the next year or two we also hope to begin to use technology more fully to allow collaboration and interaction across Atlantic Canada. In future newsletters we shall describe the main thrust of various new initiatives. For now, suffice it to say that there are presently many fine young researchers at AARMS universities and our opportunities for growth and for outreach depend on our ability to engage them with AARMS.

Jonathan Borwein

Letter from the Associate Director



It's a great pleasure for me to be involved with AARMS again. An organization such as this gets a considerable 'bounce' from a change in leadership. When I handed the directorship to

Hermann Brunner at MUN there was an almost immediate leap forward in the level of organization and professionalism. AARMS was suddenly no longer a reaction to current events but an institution --- if not an institute. Whereas AARMS in the early days had begged in an ad hoc way for funding for conferences and workshops, Hermann put in place a secure funding base, with six major partners, on which AARMS has been able to regularize such programmes as its graduate level Summer School, postdoctoral fellowships, and APICS/AARMS days, while organizing and supporting far more conferences and workshops on a variety of scales.

With Jon Borwein as AARMS director I'm confident that we can make another quantum leap. At this writing, AARMS has an annual operating budget of \$216,000 and had I written this two weeks ago the number would have been considerably smaller! Where we are still far behind our colleagues in other provinces is provincial government support. A major challenge for the new AARMS directorate will be the articulation to governments of the role that Mathematics can play in the development of 21st century economies.

Richard J. Wood

News

Mount Allison joins AARMS

We are pleased to announce that Mount Allison University will be joining AARMS, the first member to take advantage of our new tiered membership structure. More details of that structure can be found on our website. We hope to be welcoming other new members shortly.

Atlantic Analysis Days

The first AARMS / Dalhousie Atlantic Analysis Days was held on January 20 - 21, 2006 at Dalhousie University hosted by Jon Borwein. More than 40 registered participants attended with plenary lectures from 6 prestigious guest speakers including Bruce Berndt (Illinois), Peter Borwein (Simon Fraser), Alexander Ioffe (Technion), Adrian Lewis (Cornell), Boris Mordukhovich (Wayne State) and José Francisco Rodrigues (Coimbra and Lisbon). Details and abstracts can be found on the Events page of the AARMS website.

The Friday sessions focused on non-smooth analysis and the Saturday sessions were devoted to analysis in general. Two exceptions to the theme were a presentation by statistician Bruce Smith of Dalhousie and a talk on software resources for

mathematicians by János Pintér of Pintér Consulting Services.

Access Grid Technology was used at the event to enable speakers in distant locations to give their presentations. Peter Borwein presented his Plenary lecture from IRMACS at Simon Fraser University while the conference audience attended in the auditorium at Dalhousie. Qiji Jim Zhu also used this technology to deliver his presentation from his office in Western Michigan. The whole conference was broadcast on the web using e-presence software.

AARMS Regional Committees

Regional Committees have been set up in each of the main founding members of AARMS (Dalhousie, Memorial and UNB). These committees provide regional input and are comprised of representatives from mathematics, statistics, computer science, and educational and industrial outreach. **Dalhousie:** Jon Borwein, Christian Blouin, Jeannette Janssen, Dorette Pronk, Bruce Smith **Memorial:** Edgar Goodaire, Phil Bording, Wolfgang Banzhaf, Charles Lee, Sherry J. Mantyka **UNB:** Jon Thompson, Tim Alderson, David Bremner, Colin Ingalls, Renjun Ma, David Wagner

Summer School 2006

Following the very successful AARMS Summer school at Dalhousie last year, we are quite excited about the line-up of courses and instructors for this coming summer.

As usual, there will be four, beginning-graduate-level courses. These are: Elliptic Curve Cryptography given by Mark Bauer of the University of Calgary; Massive Networks and Internet Mathematics given by Anthony Bonato from Wilfrid Laurier University; Introduction to Algebraic geometry given by Rick Miranda from Colorado State University; and Introduction to Wavelet Theory and Numerical Applications given by Anita Tabacco from Politecnico di Torino.

This summer school takes place from July 16 to August 12, 2006 in the Chase building on the Dalhousie campus. The lectures will run from Monday to Friday and keep everyone busy. There should be some time to relax at the weekends and various trips are planned including one to Lunenburg.

We already have almost 30 applications. So far this year, they are mostly from across Canada which contrasts with last year when we had many students from Europe. The Cryptography course looks like being the most popular and is already just about full. There is, however, space in the other courses if anyone wishes to apply.

Tony Thompson
Director, AARMS Summer School

The People Page

AARMS Postdoctoral Fellowships

This year two new Postdoctoral Fellowships have been awarded, one to Toby Kenney, supervised by Robert Pare and Richard Wood at Dalhousie, and one to Dansheng Yu, supervised by Ping Zhou at St Francis Xavier. Kia Dalili is nearing the end of the first year of his PDF, supervised at Dalhousie by Sara Faridi.



Toby Kenney has been studying at the University of Cambridge since 1998. He obtained his first Mathematics degree in 2001 and subsequently did the famous one year course known as "Part III" before

starting his PhD in Category Theory under the supervision of Professor Peter T. Johnstone. He submitted his thesis, "Topics in Topos Theory", in December of 2005. He has three papers submitted for publication and his main research interest at present is the use, in topoi, of "copower objects", which might be described as "spaces of quotient spaces".



Dansheng Yu obtained his Bachelors degree from Hangzhou Institute of Teachers in 1994 and he completed his Masters degree at Zhejiang University, P. R. China, in 2001. Under the direction

of Dr. Songping Zhou, he completed his doctoral work at Zhejiang University and obtained his Ph.D. in March, 2006. His research interests are mainly in approximation theory, Fourier analysis, and polynomial inequalities.



Kia Dalili was born in Tehran, Iran in 1977. He completed his B.Sc. in Mathematics at Sharif University, also in Tehran, in 1999. Afterwards he moved to New Brunswick, New Jersey. Working

under Professor Wolmer Vaconcelos in Rutgers University, he completed his Ph.D. in commutative Algebra in 2005, with a thesis titled "Cohomological methods for determining numerical invariants of algebras and modules.

A Tribute to Hermann Brunner



In January, **Hermann Brunner** stepped down as Director of AARMS, an organization he brought to its feet over the past six years. It's hard to believe that in the old days, we had to go cap in hand to various sources asking for paltry

sums to support a workshop. I have had the privilege of having an office next to Hermann's for quite some time. I know first hand the countless hours of planning, communicating, and lobbying in which Hermann has engaged, the extraordinary effort it took in 2002 to arrange meetings in three provinces of the Directors of Fields, the CRM and PIMS with high-ranking officials at Dalhousie, Memorial and UNB, as well as others representing government and the private sector.

As the AARMS Directorship passes to Jon Borwein at Dalhousie University, and with thanks to the three major institutes, MITACS and four Atlantic Canada Universities, AARMS funding is stable, at a reasonable level and within the organization's control.

AARMS now has an esteemed Board of Directors, an impressive scientific review panel, an annual postdoctoral fellowship competition, a summer school that attracts students and professors from around the world, and a record of supporting numerous workshops and conferences in Atlantic Canada. AARMS and Atlantic Canada mathematics owes Hermann Brunner profound thanks for his dedication to a task that will long be remembered.

Edgar Goodaire

Recent and Upcoming Events

International Category Theory Conference

Organizers: D. Pronk (Dal), R. Dawson (SMU), P. Selinger (Dal)

Location: White Point, Nova Scotia, June 25-July 1, 2006

More Information: www.mathstat.dal.ca/~selinger/ct2006

Atlantic Canada General Relativity Meeting

Organizers: A. Dasgupta, J. Gegenberg, R. Mckellar (UNB)

Location: University of New Brunswick, Fredericton, NB, May 5-7, 2006

More Information: Arundhati Dasgupta (adasgupt@unb.ca)

East Coast Combinatorics Conference

Organizer: Shannon Fitzpatrick (UPEI)

Location: University of Prince Edward Island, April 1-2, 2006

More Information: Shannon Fitzpatrick (slfitzpatric@upe.ca)

Atlantic Analysis Days

Organizer: Jon Borwein (Dalhousie University)

Location: Dalhousie University, Halifax, Nova Scotia, January 20-21, 2006

More Information: www.aarms.math.ca/events/atlantic

Key Dates

April 1-2	East Coast Combinatorial Conference at UPEI
May 5-7	General Relativity Miniconference at UNB
May 14-17	High Performance Computing Symposium at MUN
June 25-July 1	International Category Theory Conference at White Point
June 30	Deadline for PDF renewal reports
September 1	Starting date for AARMS Postdoctoral Fellowships

AARMS Board of Directors

Evan Kipnis (Aliant)

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Richard Nowakowski (Dalhousie)

Jon Thompson (UNB)

AARMS Scientific Review Panel

Uri Ascher (UBC)

Eric Aubanel (UNB)

Yuri Bahturin (Memorial)

Margaret Beattie (Mount Allison)

Jon Borwein (Dalhousie)

Paul Cabilio (Acadia)

John Clements (Dalhousie)

Ken Davidson (Waterloo)

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Dan Kucerovsky (UNB)

Francois Lalonde (CRM)

Bruce Smith (Dalhousie)

Catherine Sulem (Toronto)

Mary Williams (NRC)

Jianhong Wu (York)

*"Ideas must work through the brains and the AARMS of good and brave men, or they are no better than dreams."
- Ralph Waldo Emerson*