



Atlantic Association for
Research in the
Mathematical Sciences

Annual Report

2007

Preface

Firstly, I would like to thank Jon Borwein for the tremendous leadership that he provided to AARMS before retiring from AARMS in September of 2007, for personal reasons. Jon had a vision during his all too brief tenure of what AARMS can be and in that time he signed up virtually every Atlantic university with a Mathematics Department as an AARMS contributing member. Here, I wish to publicly note Cape Breton University and the University of Moncton, which joined us in 2007.

A major component of Jon's vision was to advance AARMS towards being an independent NSERC-MRS grant holder. A prerequisite for a successful application is well known to be provincial government support which, together with university-based funding, can provide 'matching' for NSERC money. This is particularly challenging for AARMS because our region is governed by four provincial governments (each of whom face many demands) so that a coordinated approach with much consultation is required. Our region contains many small universities and their solid support for AARMS, thanks to Jon, should in the long run encourage provincial government funding.

Also, Jon has given AARMS a unique edge by making AccessGrid technology a part of AARMS' routine operations both at an administrative level with regional executive meetings and in a host of scientific and educational endeavours. On my recent sabbatical visit to Australia I met considerable interest in such collaboration with AARMS. It should be noted that, because of our time zones, Australia and Atlantic Canada face an almost maximally difficult task in organizing simultaneous seminars and other collaborations. Thus if we can make it work with Australia, where we do have many common research interests, we can make it work anywhere!

Finally, I want to acknowledge the Herculean efforts of David Langstroth, our AARMS administrator, in keeping everything glued together as we transition towards a new Directorship. David's work goes far beyond what most people would imagine it to be. He is the person who ensures that all the approved events actually happen, who pays all the bills and keeps the accounts, who records our deliberations and keeps our face clean on the web, and much more.

RJ Wood
Acting AARMS Director
2008FE26

Report on Activities

Resignation of the Director

At the end of the Summer, 2007, Jonathan Borwein resigned as Director of AARMS, for personal reasons. A Search Committee was empowered by the Board of Directors to find a new Director, and in the interim Richard Wood has been serving as Acting Director. The Search Committee is chaired by Jon Thompson and includes the following people:

Catharine Baker
Edgar Goodaire
Barbara Lee Keyfitz
Dan Ryan
Keith Taylor

The expectation is for the new Director to take office in July 2008.

NSERC MRS Program

In 2007 efforts were made to prepare a proposal for funding under the NSERC Major Resources Support Program (MRS) which would substantially increase the budget, the status and the range of activities undertaken by AARMS. A letter of intent was submitted, and AARMS was encouraged to submit the full proposal by October 2007. A plan for a proposal was drawn up which involved enhanced participation on behalf of the universities, as well as a significant role for the Atlantic Provinces. Initial conversations with representatives of the provinces have been encouraging, but AARMS did not have the necessary agreements in place in time to go ahead with the proposal. Submission in 2008 will be dependent upon the strategy of the new Director.

AARMS Summer School

The 2007 AARMS Summer School was held in the Department of Mathematics and Statistics, Dalhousie University, Halifax, Nova Scotia, from July 16 to August 10. The Director of this year's School was Pat Keast, with assistance from Renzo Piccinini. There were 27 students attending classes. These came from Alberta, Brazil, China, Germany, Italy, Newfoundland and Labrador, New Brunswick, Nova Scotia, Ontario, Romania, and Spain. Several students were attending their second Summer School, and one has attended all three Dalhousie Schools. Also, one third of the students were women.

The classes taught were Polynomials (Instructor: Ed Barbeau, University of Toronto); Statistical Numerical Integration (Instructor: Alan Genz, Washington State University); Mathematical Models in Ecology and Evolution (Instructor: Frithjof Lutscher, University

of Ottawa); and Introductions to Number Theory (Instructor: Alf van der Poorten, Sydney, Australia). The students, as in previous years, were very gregarious and the atmosphere at meal times, in the dining hall of Howe Hall residence, was always wonderful. (Except for a few days when one student was mis-diagnosed as having mumps, leaving the other students a little bit nervous until the all clear was given!)

As in previous Summer Schools, students had to find their own way to Halifax, where accommodation and meals were provided by the School. There were two social events. On the first Monday, the Graduate Student Society hosted a dinner-time barbecue, which was a great success. This was held on the balcony of the Chase Building, easily the best asset of the building, especially when the weather cooperates. Then, on Saturday July 28, there was an outing to Peggy's Cove, followed by dinner at the Sou'Wester restaurant there. Despite the fact that visibility was reduced to less than a kilometer by fog, the students seemed to enjoy the experience. To underline the cosmopolitan nature of the group, when a call was made by one of the students to sing happy birthday to the Brazilian student, on the ride home, birthday wishes were sung in English, Romanian, French, Spanish and Mandarin.

This was a very successful event, and a fitting conclusion to Dalhousie's term as host. The next School will be held in Fredericton, at the University of New Brunswick.

AARMS Postdoctoral Fellowship Program

In the 2007 competition, one Postdoctoral Fellowship was awarded to: Rebecca Hammond (Acadia University, supervised by Richard Karsten and Holger Teismann). The PDFs awarded in the previous year to Toby Kenney (Dalhousie University, supervised by Robert Pare and Richard Wood) and to Dansheng Yu (Saint Francis Xavier University, supervised by Zhou Ping) continued for a second year.

AARMS Distinguished Lecture Series

There was one AARMS Distinguished Lecturer in 2007:

Neil Calkin (Fields Institute and University of Houston)

Topics:

- *Tossing Coins, and a Random Shooting Game of Lampert and Slater*
- *Recounting the Rationals*
- *Clemson's Research Experience for Undergraduates*

Lectures at Acadia, Dalhousie, Mount Allison, Saint Francis Xavier, Saint Mary's Universities, and in the Coast to Coast Seminar Series.

Scientific Activities

The following conferences, workshops and scientific activities were funded or co-funded by AARMS in 2007:

2nd AARMS/Dalhousie Atlantic Analysis Days

Organizer: Karl Dilcher
Dalhousie University, March 30-31, 2007

East Coast Combinatorial Conference 2007

Organizer: Catharine Baker
Mount Allison University, April 18-19, 2007

Workshop on Mathematical Knowledge Management

Organizer: Jonathan Borwein
Dalhousie University, April 26-28, 2007

Black Holes VI

Organizer: Jack Gegenberg
White Point Beach Resort, Nova Scotia, May 12-16, 2007

The Austin and Hempel Lecture: *Some Recent Thoughts*

by Alasdair Urquhart, University of Toronto
Dalhousie University, May 17, 2007

12th Canadian Conference on General Relativity and Relativistic Astrophysics

Organizer: Jack Gegenberg
University of New Brunswick, Fredericton, May 17-20, 2007

Canadian Mathematics Education Study Group (CMESG) Annual Meeting

Organizer: John Grant McLoughlin
University of New Brunswick, Fredericton, June 8-12, 2007

Statistical Society of Canada Annual Meeting (SSC-2007)

Special Session: Controversies over Fish Stocks
Organizer: Noel Cadigan
Memorial University, June 10-13, 2007

Workshop on Noncommutative Geometry

Organizer: Dan Kucerovsky
University of New Brunswick, Fredericton, June 11-15, 2007

AARMS/ACEnet/MITACS Summer Training Workshop in High Performance Computing in the Mathematical Sciences

Organizer: Hugh Chipman, Richard Karsten, Ronald Haynes, Duane Currie
Acadia University, July 9-14, 2007

Bluenose Numerical Analysis Day 2007

Organizers: Pat Keast, Paul Muir, Richard Karsten, Ronald Haynes
Saint Marys University, July 27, 2007

International Workshop on Groups, Rings, Lie and Hopf Algebras II

Organizer: Yuri Bahturin
Bonne Bay Marine Station, Memorial University, August 13-17, 2007

4th Workshop on Combinatorial and Algorithmic Aspects of Networking

Organizer: Norbert Zeh
Dalhousie University, August 14, 2007

10th Workshop on Algorithms and Data Structures (WADS 2007)

Organizer: Norbert Zeh
Dalhousie University, August 15-17, 2007

APICS Meeting: Special Sessions in Mathematics and Statistics

Organizers: Colin Ingalls, Rolf Turner, Maureen Tingley
University of New Brunswick, Fredericton, October, 12-13 2007

Dalhousie Euler Symposium

Organizers: K. Dilcher, R. Smirnov, S. Swaminathan
Dalhousie University, October, 26-27 2007

Relativity in Cape Breton: A General Relativity and Cosmology Workshop

Organizer: Robert van den Hoogen
Mabou River Inn, Mabou, Nova Scotia, October 26-28, 2007

Reports from the above activities are lodged online and can be read at
<http://www.aarms.math.ca/events/past.php>

AARMS Monograph Series

The First volume in the AARMS Monograph Series, in collaboration with the AMS is in production and is expected in April 2008:

A Course on the Web Graph, by Anthony Bonato

We encourage lecturers at the AARMS Summer School to submit manuscripts based on their specialist courses. There are three other manuscripts in the pipeline. The editorial board consists of the following people:

Jonathan Borwein (Dalhousie University)
Robert Dawson (Saint Mary's University)

Ron Fitzgerald (Math Resources Inc)
Dan Kucеровsky (University of New Brunswick)
Richard Wood (Dalhousie University)
David Langstroth (Dalhousie University)



Income and Expenditure Account 2007

<u>Income</u> ¹	\$	\$	<u>2006</u>
Carried forward from previous year		15,235	5,869
Mathematical Institutes		120,000	70,000
Universities		114,000	119,500
Dedicated grants		15,400	7,922
Total Income		264,635	203,291
<u>Expenditure</u>			
Summer School			
Instructors ²	30,962		28,304
Students ³	26,917		23,527
Other ⁴	9,683		13,597
		67,561	65,427
Workshops and Events ⁵		67,180	40,176
PDF Program ⁶		50,250	46,500
Director's PDF		16,750	9,602
Distinguished Lecturer Series		2,904	4,540
Book Series		2,500	541
Administrator Salary		11,541	10,377
Travel		605	4,840
Office Expenses		6,713	6,053
Total Expenditure		226,004	188,056
Surplus: Income Less Expenditure		38,631	15,235

Notes

1. For a breakdown see Appendix 1
2. Travel, Accommodation and stipends of \$5,000 each
3. Residence and Meals
4. Texts and course materials, promotion, secretarial, computing and hospitality
5. See Appendix 2
6. See Appendix 3



Balance Sheet

December-31-07

Assets

	\$	\$
Surplus from Operations (Income less expenditure)		38,631
Accounts Receivable ¹		
CRM	30,000	
Fields	30,000	
PIMS	30,000	
MITACS	10,000	
Acadia	5,000	
Cape Breton	1,000	
Dalhousie	50,000	
Memorial	30,000	
Moncton	1,000	
Mount Allison	1,000	
Saint Francis Xavier	1,000	
Saint Mary's	1,000	
UNB	30,000	
UPEI	1,000	
	221,000	
Total Assets		259,631

Liabilities

Accounts Payable ²		
Summer School	75,000	
Postdoctoral Fellowships	43,750	
AARMS Director's PDF	17,500	
Scientific Activities ³	66,655	
AARMS Book Series	5,000	
Administrator Salary	15,000	
Distinguished Lecturers	5,000	
AARMS Poster	3,000	
Travel and Office expenses	8,000	
	238,905	
Unallocated funds - for AARMS activities		20,727
Total Liabilities		259,631

Notes

1. Fees due to be collected in 2008
2. Funding Commitments in 2008
3. Workshops, Conferences, Meetings, Atlantic Algebra Centre



Annual Accounts 2007

Appendix 1

Revenue Breakdown

Mathematical Institutes		
CRM	45,000	
Fields	30,000	
PIMS	45,000	
		120,000
Universities		
Acadia	5,000	
Cape Breton	1,000	
Dalhousie	45,000	
Memorial	30,000	
Moncton	1,000	
Mount Allison	0	
Saint Francis Xavier	0	
Saint Mary's	1,000	
UNB	30,000	
UPEI	1,000	
		114,000
Dedicated Revenue		
MITACS (for summer school)	5,000	
Dalhousie VP (for summer school)	400	
Dalhousie Dean of Science (for ASCI)	10,000	
		15,400



Annual Accounts 2007

Appendix 2

Workshops and Scientific Events

Atlantic Community Math Network Conference	3,968
Statistical Society of Canada Annual meeting (SSC2007)	4,500
Atlantic Algebra Centre	11,000
Atlantic Optimization Days	2,747
APICS sessions at CBU (refund of 2006 overpayment)	- 871
Atlantic Analysis Days	3,437
ACEnet/AARMS HPC workshop	5,000
Mathematical Knowledge Management Meeting	996
CMESG Conference	2,000
CUMC Conference	1,000
Outreach Workshops at Dalhousie (R. Nowakowski)	204
Black Holes VI	5,000
12th Cdn Conference on General Relativity	3,000
Admin support for Black Holes and General Relativity	2,500
Intl Workshop on Groups Rings, Lie and Hopf Algebras II	5,000
Bluenose Numerical Analysis Day	2,889
Pure Math Graduate Conference	1,000
Non Commutative Geometry at UNB	5,400
APICS sessions at UNB (2007)	3,787
New Brunswick Math Competition	613
East Coast Combinatorics Conference 2007	3,000
AARMS / CRM Workshop: Functional and Delay Diff. Eq.	133
Dalhousie Euler Symposium	877
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total	67,180

Appendix 3

Postdoctoral Fellowships

Tobey Kenney	16750
Dansheng Yu	16750
Kia Dalili	8000
Rebecca Hammond	8750
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total	50,250