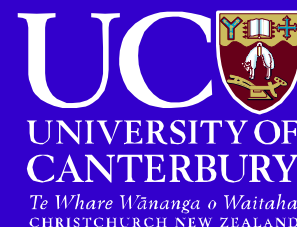


Newsletter

Department of Mathematics and Statistics



Issue 13/04

OCTOBER 2004

This Newsletter:

- Publications
- Paper Accepted
- Paper Presented
- PhD Completed
- Congratulations – Summer Scholarship
- Department Research Funds
- The Dance of Mathematics
- Problem Corner
- Applied And Industrial Mathematics In Korea
- Heritage Week Dancing
- Department Visitors

"The good Christian should beware of mathematicians and all those who make empty prophecies. The danger already exists that the mathematicians have made a covenant with the devil to darken the spirit and to confine man in the bonds of hell." (St Augustine)

PUBLICATIONS

Oxley, L., Reale, M. and Tunnicliffe Wilson, G. "Finding directed acyclic graphs for vector autoregressions" in Antoch J. (ed.) Compstat 2004: Proceedings in computational statistics, pp 1621-1628. Physica-Verlag, 2004.

van-Brunt, B., Marshall, JC, & Wake GC, " Holomorphic solutions to pantograph type equations with neutral fixed points", Journal of Mathematical Analysis and Applications, Vol 295, 2004 pp 557-569.

Shah, AA & Wake, GC. " The existence of steady states to a combustion model with internal heating", Vol 5, No. 3, 2004, p. 421-439.

PAPER ACCEPTED

Chase, J.G., Rudge, A.D., Lee, D.S. and Shaw, G.M. (2004). H-infinity control analysis of patient agitation management in the critically ill, Intl Journal of Intelligent Systems Technologies and Applications (IJISTA), accepted September 04 to appear, ISSN: 1740-8865.

PAPER PRESENTED

Rudge, A.D., Shaw, G.M., Chase, J.G., and Lee, D.S. (2004). Physiologically-based minimal model of agitation-sedation model dynamics, 2004 Canterbury Health Sciences Research Conference (CHSRC 2004), September 5-6, Christchurch.

PHD COMPLETED

Nohayati (Yati) completed her PhD thesis and it was submitted on 23rd September. It is entitled "A bifurcation analysis of multi-compartment models of plankton, phytoplankton, and nutrient interaction". Yati is now a lecturer in Mathematics at her University, in Brunei Darussalam (UBD). She originally enrolled in October 1998. Well-done Yati.

Graeme Wake

CONGRATULATIONS

Congratulations to Neils Gresnigt for his successful Summer Scholarship application. His supervisors are Peter Renaud along with Phil Butler and William Joyce from Physics. The Project Title – Application of Clifford algebras to electromagnetism.

DEPARTMENT RESEARCH FUNDS

Congratulations to the following who have been awarded grants towards conference expenses.

- Carl Scarrott will be at the AMSI Summer Symposium in Bioinformatics being held in Canberra in December 2004.
- Arno Berger will be attending the AMI meeting at the University of Edmonton, Alberta in October 2004.
- Bill Taylor to attend and present a paper on Number Theory at the NZMS Colloquium in Dunedin in December 2004.

Associate Professor Ian Coope

THE DANCE OF MATHEMATICS

The Science and Technology Promotion Fund http://www.rsnz.org/funding/st_promotion/ has given me a grant for a project called “The Dance of Mathematics.” This fund supports “activities that make people enthusiastic about science, mathematics, social sciences and technology and excite a desire to find out or experience more.” **The plan is to run six two day community “math dance events”.**

A barn dance will bring a cross section of the community together. The hall will be decorated with mathematical themes. At the dance the community will meet the mathematicians and get a small preview of the coming mathematical attractions. The following day, we will give a mathematical “performance” – lots of demos and participation.

The target audience is a large cross-section of New Zealand, with a particular focus on rural communities who are often left out of other outreach programmes. We will reach both adults and children at the barn dance and the mathematical lecture/performance. The Dance of Mathematics will be a means to make the fun and interest of maths more accessible to the wider community.

I will be organizing the trips over the summer to happen mostly in the first half of next year.

Burkard Polster and I will give some of the mathematical performances.

Additional talent will be provided by mathematical visitors and postgraduate students. **Is anyone in the department interested in being part of this additional talent?** The grant will pay for an “all expenses paid trip!”

I’d appreciate any suggestions of communities that might be interested.

Thanks, Bill

PROBLEM CORNER

The interior angles of a convex pentagon are all equal. All its sides have rational length. Prove that it must be regular. As usual, there is a chocolate fish for the first correct proof. *Bill Taylor*

APPLIED AND INDUSTRIAL MATHEMATICS IN KOREA

In 2002, while still at Canterbury, Professor Graeme Wake (pictured), from the Centre for Mathematics in Industry within the Institute of Information and Mathematics Sciences on Massey's Albany Campus, was invited to form and lead an International team to foster the development in Industrial and Applied Mathematics at the Korean Advanced Institute for Science and Technology (KAIST) in Daejeon, South Korea. The team of four consists of 2 New Zealanders (Mark McGuinness, VUW and Graeme), a Canadian and an Australian.



In rotation they have provided advanced postgraduate courses in mathematical modelling and led Initiatives focussed towards the eventual scheduling of Mathematics-in-Industry Study Groups : to provide a forum for industrial problem-solving. The first was in July 2003, and was supported in part by the RSNZ under their international linkages program. The second in this series was held late in August 2004 and details are on <http://amath.kaist.ac.kr/imi>

Graeme has just returned from a second of three month-long visits to Daejeon. He reports:

"Daejeon is about 200kms south of Seoul, and is home to KAIST which is on-track to become a MIT of North Asia. There is a heavy involvement of scientific research in the area and a bias towards postgraduate student research. Our visiting team provides postgraduate courses in block mode. My host department (the newly formed Division of Applied Mathematics at KAIST) has a goal of being the leader in the country, with a push towards Applications of Mathematics, unlike their fore-runners which were akin to Mathematics Departments in North America in the 1960 – 70's, with little applications-focused mathematics."

"The students are selected from all over the country (48 million people) and occasionally from neighbouring countries (I had one from Mongolia this year) with intense competition for entry. Our visiting team is housed on campus in an international village and enjoys the cultural immersion in a finely- tuned and very different society."

"In turn, students and faculty from Korea have participated in our Mathematics-in-Industry Study Group here in New Zealand, such as that which will be hosted at Albany in January. See <http://misg2005.massey.ac.nz>"

During this last visit in August 2005, Graeme linked up with the NZ Ministerial team in Science and Technology led by Hon Peter Hodgson which visited Korea, along with China and Japan. Programs such as ours are to be fostered under the Ministry's auspices, and are seen as pioneers in the region for the New Zealand – Korea co-operation in Science. He also was an invited speaker at the bi-annual Korean Applied Mathematics `Forum, and a Mathematical Biology workshop in Gyeongju, in the southern part of the Korean peninsula.

The team program which Graeme leads is now in the final year of operation. There is a willingness to extend this sort of activity in Industrial and Applied Mathematics beyond its present schedule, which has it finishing in 2005.

A similar initiative is beginning in Thailand. Professor Robert McKibbin, Head of the Institute of information and Mathematical Sciences at Massey, visited in May and Professor Graeme Wake is

following up with a week long visit to Bangkok in October. It is expected Massey's Centre for Mathematics-in-Industry will be heavily involved as this initiative develops.

Contact g.c.wake@massey.ac.nz

22nd September 2004.

HERITAGE WEEK DANCING

The University of Canterbury and the Christchurch City Council are jointly organizing an event for Christchurch Heritage week in October. Historical events associated with the Old Provincial Chambers (Bellamy's) are being organized. I have been asked to work with the Head of Music and a few people from Political Science to "recreate" the opening of the first Royal Ball which was held in 1869 when Prince Alfred Duke of Edinburgh visited Christchurch. This public event will be on 21 October from 5 to 6:30.

Bill Baritomba



DEPARTMENT VISITORS

Current Visitors	Name of Organisation	From	To	Room	Ext No
Dr Chris Glasbey	Biomathematics & Statistics Scotland	18-Sep-04	16-Oct-04	607	8875
Prof. John Chapman	University of Oxford	25-Sep-04	30-Nov-04	501	8376
Visitors due to arrive	Name of Organisation	From	To	Room	Ext No
Bruce Richter	University of Waterloo	11 Oct 2004	13 Oct 2004	620	7431
Prof. Jotun Hein and Dr Annamette Hein	University of Oxford	5 Jan 2005	20 Apr 2005		
Prof. Claude Belisle	Laval University, Quebec	5 Jan 2005	30 Jun 2005		
Jerry King	Lehigh University	5 Jan 2005	31 Mar 2005		