Newsletter
Mathematics & Statistics

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"Never hold discussions with the monkey when the organ grinder is in the room".

Sir Winston Churchill

This Newsletter

CONGRATULATIONS

Jean Gong recently gained an award to further her PhD from the NZ Federation of Graduate Women (NZFGW). On May 12th Jean gave a talk at the Copper Top, entitled "Improved statistical methods for modeling health outcomes - whether mammography reduces breast cancer morality". This was most warmly received. Nine other talks entertained the session with 20 2005 NZFGW awards in total. Jean's research is also supported by the NZ Institute of Mathematics and its Applications (NZIMA).

To inform in the spirit of "What Am I Doing Here (student-wise)" we include an abstract on Jean's work:
All-or-no compliance and non-ignorable censoring are currently both important topics worldwide in statistics. Jean is the first, to date, to do the math for time-to-event (survival) data, considering both all-or-no compliance and non-ignorable censoring simultaneously. She has confirmed the value of mammography in extending life and improving quality of life. Jean's research has to date, developed methodologies and computational code to model "survival data" or "time-to-event" data, in relation to treatment in a randomised controlled trial setting and in the presence of non-compliance to allocated treatment. Traditionally, survival data arises from randomised clinical trials (RCTs). Non compliance to treatment is a critical and often overlooked issue in medical research. Patients can non-comply when they are on a so-called control arm (placebo) or on the treatment of interest (active, non-placebo). Jean et al's methodologies provide better precision to evaluate treatment efficacy and is specific to the special case when standard survival methods, developed over the last 30 years, are invalid. To date Jean has developed and formulated 3 models: [1] the Causal Cox Model (CCM), [2] the Bayesian Causal Accelerated Failure Time Model (BC-AFT) and [3] the EM-Weibull model. All these extend conventional survival analysis methods to both Bayesaian and non-Bayesian scenarios".

Irene Hudson

PAPERS PUBLISHED

Neil A. Watson, "A Nevanlinna theorem for superharmonic functions on Dirichlet regular Greenian sets", Mathematica Bohemica, v130, 2005:1-18.

Rudge, AD, Chase, JG, Shaw, GM Lee, DS, Wake, GC, Hudson, I & Johnston, L. 2005. Impact of Control on Agitation-Sedation Dynamics. Control Engineering Practice, Vol 13(9):pp 1139-1149. ISSN:0967-0661.

D.S. Bridges, `A weak constructive sequential compactness property and the fan theorem', Logic J. of the IGPL 13(2),151--158, 2005.

PAPERS ACCEPTED

Rudge, A.D., Chase, J.G., Shaw, G.M. and Lee, D.S. "Physiological modelling of agitation-sedation dynamics". Medical Engineering and Physics.

D.S. Bridges and L.S. Vîță, 'The constructive uniqueness of the locally convex topology on R^n', in: Proc. Conf. on From Sets and Types to Topology and Analysis, San Servolo, Venice, May 2003; Oxford Logic Guides, Clarendon Press, Oxford.

D.S. Bridges, H. Ishihara, L.S. Vîță, 'A new constructive version of Baire's Theorem', Hokkaido Math. Journal.

D.S. Bridges, H. Ishihara, P.M. Schuster, L.S Vîță, 'Products in the category of apartness spaces', Cahiers de Topologie et Géometrie Différentielle.

D.S. Bridges, H. Ishihara, P.M. Schuster, L.S. Vîță 'Strong continuity implies uniform sequential continuity', Archiv für Math. Logik.

D.S. Bridges, H. Ishihara, R. Mines, F. Richman, P.M. Schuster, L.S. Vîță, 'Almost locatedness in uniform spaces', Czechoslovak Math. J.

D.S. Bridges and R.S. Havea,'Approximating the numerical range in a Banach algebra', in: Proc. Conf. on From Sets and Types to Topology and Analysis, San Servolo, Venice, May 2003; Oxford Logic Guides, Clarendon Press, Oxford.

D.S. Bridges, R.S. Havea, P.M. Schuster,'Constructive Banach algebra theory and the Nullstellensatz', Publ. Math. Debrecen.

OTHER

Fibonacci strikes again!

Colleagues will have noticed the triangle pattern in the new layout of the area between the Hight Library and the Registry, but have you counted the squares? The pattern is made up of 2x1 blocks and the triangles are right angled with sides 23 and 37 units. The ratio of these is 1.608:1, one of the closest ratios to the golden section (1.618:1) obtainable with such small numbers. I wonder whether the architect did it on purpose?

David Robinson

NOTICE

From the Education Gazette

9th Biennial MATHS Teachers Conference to be held in Christchurch at Christ's College from 27 – 30 September 2005.

DEPARTMENT RESEARCH FUNDS

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

- Dominic Lee: Workshop of Hidden Markov Models and Complex Systems, Wanaka, 29th June.
- Jennifer Brown is presenting a paper at the International Congress of Ecology in Montreal – August 2005.

PROBLEM CORNER

A totally ordered set A has the property that

$\forall$ p,q $\in$ A with p < q , the open interval (p , q) is isomorphic to the set of rational numbers.

How many different (non-order-isomorphic) such sets A are there?

Note: the answer is a finite number, but it is quite tricky to pin it down!

Bill Taylor

A circle is MATHS

Bill waves his hands about.

Burkard juggles the Universe.

DEPARTMENT VISITORS

Current Visitors	Name of Organization	From	To	Room	Extn
Prof. Claude Belisle	**Université Laval**	**15 Dec 2004**	**30 Jun 2005**	**501**	**8376**
Dr Hakan Lindstrom	**Uppsala Technical University**	**7 Feb 2005**	**31 May 2005**	**501**	**8376**
Dr Burkard Polster	**Monash University**	**21 Feb 2005**	**10 Jun 2005**	**605**	**8028**
Michelle Swenson	**University of Texas, Austin**	**27 Jan 2005**	**2 June 2005**	**720**	**8337**
Visitors due to arrive	**Name of Organization**	**From**	**To**	**Room**	**Ext No**
Dr John Holt	**University of Massey**	**15 May 2005**	**31 Mar 2006**	**502**	**7663**
Associate Professor Richard Laugeson	**University of Illinois**	**1 Jun 2005**	**16 Aug 2005**	**607**	**8875**
Prof. Daniel Naiman	**John Hopkins University, Maryland**	**9 Jul 2005**	**14 Aug 2005**	**710**	**7431**
Prof. Dominic Welsh	**University of Oxford**	**1 Sept 2005**	**1 Dec 2005**	**620**	**7431**
Ms. Tanja Gernhard	**University of Munich,Germany**	**24 Sept 2005**	**24 Dec 2005**	**616**	**8876**
Dr Granville Tunnicliffe-Wilson	**Lancaster University, U.K.**	**25 Sept 2005**	**15 Nov 2005**	**710**	**7431**
Dr Jon Pitchford	**University of York, York.U.K.**	**15 Oct 2005**	**15 Jan 2006**	**607**	**8875**
Prof. Domenica Piccolo		**7 Feb 2006**	**6 May 2006**		
Prof. Daniel Huson	**Tuginben University, Germany**	**15 Feb 2006**	**15 Jun 2006**		
Prof. Stephen Gardiner		**10 July 2006**	**31 Aug 2006**		
Prof. Jeremy Levesley		**9 July 2006**	**14 Sept 2006**		