

43rd Gregynog Statistical Conference Programme

(2007)

The talks will take place in Seminar Room 1 (2nd Floor, far end).

Friday 13 April	16.00	Tea	
	17.30	Professor David Hobson	Warwick
		<i>Skorokhod embeddings with applications to finance</i> 1. <i>Skorokhod embeddings: a beginner's guide.</i>	
	19.00	Dinner	
Saturday 14 April	08.00	Breakfast	
	09.30	Professor Frank Dunstan	Cardiff
		<i>Environmental influences on the seasonality of campylobacter infections.</i>	
	11.00	Coffee	
	11.30	Professor David Hobson	Warwick
		<i>Skorokhod embeddings with applications to finance</i> 2. <i>Optimal Skorokhod embeddings</i>	
	13.00	Lunch	
		<i>Afternoon free</i>	
	16.00	Tea	
	17.00	Dr Simon Shaw	Bath
		<i>Theory and Applications of Bayes Linear Kinematics</i>	
	19.00	Dinner	
Sunday 15 April	08.00	Breakfast	
	09.30	Dr Vassili Kolokoltsov	Warwick
		<i>Fractionally stable distributions, as limits for continuous time random walks, and statistical estimation of their parameters.</i>	
	11.00	Coffee	
	11.30	Professor David Hobson	Warwick
	<i>Skorokhod embeddings with applications to finance</i> 3. <i>Skorokhod embeddings and applications to finance.</i>		
	13.00	Lunch and finish	

Abstracts

Professor Frank Dunstan

Cardiff

Environmental influences on the seasonality of campylobacter infections.

Campylobacter is the most common bacterial gastrointestinal infection in Europe and other temperate parts of the world. Although there are some established risk factors, such as exposure to animals and eating undercooked food, none explains a large percentage of the cases. The incidence of the disease displays a striking seasonality, with high peaks in late spring in the northern hemisphere, and there is published evidence that this seasonality varies between countries. There is concern that global warming may increase the burden of the disease.

The aim of our project is to link variation in incidence with climate and environmental data to try to establish relationships which might give some clues about the aetiology of the disease. This talk uses data on over 500,000 cases over 13 years in England and Wales, and data for shorter periods from other European countries, to investigate the seasonality and, in particular, to examine spatial variation in this seasonality. The data consist, for a given geographical area, of a time series of weekly counts of notifications of the disease. The talk will discuss modelling these series and also the modelling of the spatial patterns using Bayesian methods of spatial smoothing.

Preliminary results show a surprising pattern and it is hoped that they may give a clue to the aetiology of the disease. Links to different environmental variables, ranging from climate to bird migration, will also be discussed.

Dr Vassili Kolokoltsov

Warwick

Fractionally stable distributions, as limits for continuous time random walks, and statistical estimation of their parameters.

Continuous time random walks (CTRL), where not only the jumps themselves but the waiting times as well are random, are used as modeling tools in various domains of science from physics to economics. Recent results show that their limiting distributions (under appropriate scaling, e.g. as times go to infinity) usually have the form of stable or fractional stable laws that do not have finite variances.

This makes it difficult to use many standard methods for statistical estimations of their parameters. A possible way out is given by the method of logarithmic moments.

Dr Simon Shaw

Bath

Theory and Applications of Bayes Linear Kinematics

Richard Jeffrey introduced a method of generalised conditioning, probability kinematics, for revising a prior probability specification based upon new probabilities over a partition. The new probabilities may have been obtained by formal conditioning upon data or informally by pure reflection, unexpected sensory stimuli and so forth. Bayes linear kinematics is the corresponding scheme when formal updating is performed using a Bayes linear analysis. In this talk, we give an overview of the theory of Bayes linear kinematics, drawing particular attention to the problems associated with performing successive Bayes linear kinematic updates. We look at applications such as the construction and analysis of the Bayes linear Bayes (BLB) graphical model and motivate future developments such as updating schemes blending both Bayes linear kinematics and probability kinematics.

Speakers

Professor David Hobson
Professor Frank Dunstan
Dr Vassili Kolokoltsov
Dr Simon Shaw

Warwick
Cardiff
Warwick
Bath

Staff

Students

Aberystwyth

Alan Jones

John Lane

Bangor

Chris Whitaker
Michael Cain

Rhiannon Whitaker

Cardiff

Daniel Farewell
John Belcher

Jessica Read
Venkat Timmaraju

Mark Kelly

IGER (Aberystwyth)

Jen Marsh

Keele

Prof Peter Jones

Charis Emmett

Southampton

Prof Russell Cheng

Swansea

Owen Bodger
Mike Gravenor
Alan Watkins

Hannah Finselbach
See Ju Chua

Imad Salah
Jen Ning Tan

Warwick

Tony Lawrance
Mylene Bedard
Jane Hutton
Mark Steel
John Copas
Masa Henmi

Silvia Liverani
Peter Windridge
George Sermaidis
Guy Freeman
Maria Costa
Nastasiya Grinberg

Miguel Belmonte
Maria Vaquez
Alessandro Carta
Sam Finch
Peter Kimani