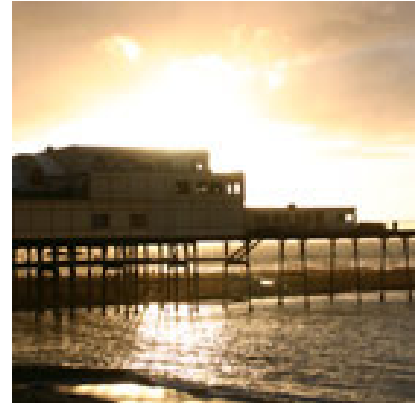


# Stochastic Processes at the Quantum Level



**Wednesday 21/ Thursday 22 October 2009**

**Venue:** Council Chambers,  
National Library of Wales,  
Aberystwyth

**Abstract:**

The meeting focuses on recent mathematical developments and applications of classical and non-commutative probability toward modelling the quantum world. There has been considerable interest amongst mathematicians in the quantum generalizations of open systems, statistics, stochastic processes, measurement and filtering theory, however, these pioneering endeavours are now finding direct application in emergent technologies based on the prospect of quantum control. We bring together experts in mathematical and theoretical physics to discuss topics in quantum stochastic processes, quantum filtering based optimal control and coherent control, quantum feedback networks, and quantum statistics and independence. We shall also address future challenges.

The meeting begins 14.10 on Wednesday afternoon, and continues on Thursday morning. For registration, and further details see the webpage <http://spq1.dph.aber.ac.uk> or contact the local organisers (details below).

There are limited funds available to support graduate students attending the meeting.

For more information on scientific questions or information on organisational matters contact the organisers John Gough ([jug@aber.ac.uk](mailto:jug@aber.ac.uk)) and Rolf Gohm ([rog@aber.ac.uk](mailto:rog@aber.ac.uk)).



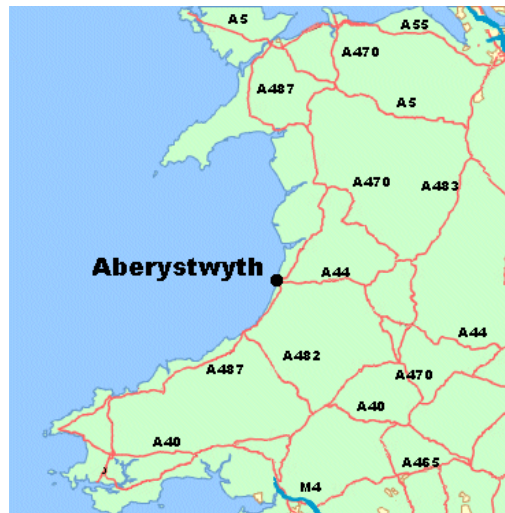
# Stochastic Processes at the Quantum Level

## Programme:

Wednesday 21 October		
<b>2.10</b>	<b>Welcome</b>	
<b>2.30</b>	<b>Alex Belton</b> University of Lancaster	<i>Quantum random walks.</i>
<b>3.00</b>	<b>Rolf Gohm</b> Aberystwyth University	<i>Non-commutative Markov chains and multi-analytic operators.</i>
<b>3.00</b>	<b>Madalin Guta</b> Nottingham University	<i>Local asymptotic normality for quantum Markov chains.</i>
	- Afternoon Tea -	
<b>4.10</b>	<b>Mazyar Mirrahimi</b> SISYPHE – INRIA Rocquencourt	<i>Feedback generation of quantum Fock states by discrete QND measures.</i>
<b>5.00</b>	<b>Viacheslav Belavkin</b> Nottingham University	<i>Affine and Itô *-algebras, Krein and Fock L-modules and representation of quantum Lévy measures.</i>

Thursday 22 October		
<b>9.30</b>	<b>Andrew Neate</b> Swansea University	<i>Hamilton Jacobi theory and the stochastic Burgers equation with vorticity.</i>
<b>10.00</b>	<b>Robin Hudson</b> Loughborough University	<i>Unitary covariant bi-evolutions and causal structures.</i>
<b>10.30</b>	<b>Claus Köstler</b> Aberystwyth University	<i>Exchangeability, braidability and quantum independence.</i>
	- Morning Coffee -	
<b>11.30</b>	<b>John Gough</b> Aberystwyth University	<i>Quantum Feedback Networks.</i>
<b>12.00</b>	<b>Hendra Nurdin</b> Canberra	<i>Synthesis of linear quantum stochastic systems via quantum feedback networks</i>

# Getting to Aberystwyth



National Library Wales

Train Station



The London  
Mathematical  
Society



Wales Institute for  
Mathematics &  
Computational Sciences

