Microlocal Day #3

"Noncommutative Harmonic Analysis and Probability"

Imperial College London, UK

12 December 2012

Organisers

Veronique Fischer
Michael Ruzhansky

(Imperial College London)

In the framework of LMS Joint Research Group"Noncommutative Harmonic Analysis and Probability"

Conference Venue: **Room 130 for 12am-2pm**, and **room 340 for 2pm-6pm**, Huxley Building, Imperial College London

Address : Department of Mathematics, Imperial College London, 180 Queen's Gate, London SW7 2AZ, United Kingdom

The Microlocal Day is an occasional event devoted to intensive series of lectures or talks on different aspects of the microlocal analysis and related topics. The program includes research lectures as well as survey lectures aimed at researchers and PhD students interested in the subject. All are welcome to attend.

Previous events: Microlocal Day #1, Microlocal Day #2.

Speakers

- **Dave Applebaum** (Sheffield University, *UK*)

- **Veronique Fischer** (University of Padova, *Italy*)
- **Michael Ruzhansky** (Imperial College London, *UK*)
- **Yuri Safarov** (King's College London, *UK*)

Schedule

Wednesday, 12 December, 12am—5pm, Imperial College London

Room **130**

- **12:00-12:45** Dave Applebaum (Sheffield University, *UK*) *Brownian motion, martingale transforms and Fourier multipliers on Lie groups*

Room **340**

- **14:00-14:45** Yuri Safarov (King's College London, *UK*) *Pseudo-differential operators and connections*
- **Coffee break**
- **15:00-15:45** Michael Ruzhansky (Imperial College London, *UK*) *Pseudo-differential operators on compact Lie groups*
- **16:00-16:45** Veronique Fischer (University of Padova, *Italy*) *Pseudo-differential operators on nilpotent Lie groups*

For further information please contact
Michael Ruzhansky at this e-mail address

SUGGESTION OF HOTELS IN THE AREA (EARL'S COURT STATION, 15 MINS WALK TO IMPERIAL COLLEGE)

Merlyn Court Hotel
Maranton House Hotel
Barkston Gardens
City Hotel Kensington
For other hotels see here

HOW TO GET TO THE DEPARTMENT OF MATHEMATICS, IMPERIAL COLLEGE LONDON

Travel to the tube station **Gloucester Road** (District, Circle, and Piccadilly Lines).
When you exit the station, turn left along Gloucester Road, crossing Cromwell Road 50 meters from the exit.
After 4-5 minutes walk along Gloucester Road, turn right to Queen's Gate Terrace.
This is a short road leading directly to the entrance of the Huxley Building, at 180 Queen's Gate. We are on floor 6.

Abstracts

Dave Applebaum (Sheffield University) *Brownian motion, martingale transforms and Fourier multipliers on Lie*

groups

We associate a space-time martingale to Brownian motion on a Lie group G and transform it to obtain a family of ``differentially subordinate" martingales. Using powerful inequalities due to Burkholder, Banuelos and Wang we construct a family of linear operators which are bounded on $L^{p}(G, \tau)$ (where τ is a Haar measure) for all 1 < p < \infty. When G is compact, we can utilise non-commutative Fourier analysis to represent these operators as Fourier multipliers. Examples include second order Riesz transforms and operators of Laplace transform type.
Talk based on joint work with Rodrigo Banuelos (http://arxiv.org/abs/1206.1560).

Veronique Fischer (University of Padova) *Pseudo-differential operators on nilpotent Lie groups*

Building on the recent developments in the setting of compact Lie groups, we will present a pseudo-differential calculus on graded nilpotent Lie groups. Motivation and future developments for this research will also be discussed.
This is a joint work with Michael Ruzhansky (Imperial College London)

Michael Ruzhansky (Imperial College London) *Pseudo-differential operators on compact Lie groups*

In this talk we will present recent developments of the global quantisation theory on compact Lie groups with new applications to some questions of function theory, harmonic analysis and partial differential equations.

Yuri Safarov (King's College London) *Pseudo-differential operators and connections*

The talk will review some results on coordinate-free symbolic calculi of pseudodifferential operators. It will discuss several possible approaches to the problem and applications to spectral theory.

Previously organised: Microlocal Day #1, #2