

NORTH BRITISH FUNCTIONAL ANALYSIS SEMINAR

A meeting of the North British Functional Analysis Seminar will be held in Classroom D of the School of Mathematics, Leeds University, from 2.30 and 5.00 on Friday, 4 March 2005.

Prof. Gilles Godefroy

Université Paris 6, France

Lipschitz isomorphisms between Banach spaces

2.30pm and 4.00pm on Friday, 4th March 2005

In addition, on Saturday the 5th, there will be a “Functional Analysis Morning” in the same location from 9am to 1pm. Talks include:

- 09.00–09.40am **Dr. Martin Mathieu** (Belfast)
A non-selfadjoint version of Kadison’s noncommutative generalisation of the Banach-Stone theorem
- 09.45–10.25am **Dr. Martin Smith** (York)
On the products of Toeplitz operators on Bergman spaces
- 10.30–11.10am **Dr. Michael Dritschel** (Newcastle)
Interpolation in semigroupoid algebras
- 11.35am–12.15pm **Dr. Amol Sasane** (London School of Economics)
An abstract approach to the Nehari-Takagi problem
- 12.20–1.00pm **Prof. Alastair Gillespie** (Edinburgh)
Dimension free estimates for operators associated with Riesz transforms

All interested are welcome to attend.

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Gilles Godefroy

Lipschitz isomorphisms between Banach spaces

Abstract: A Banach space X is in particular a complete metric space, and a natural question to ask is if its linear structure is determined by its metric. In other words, if a Banach space Y is Lipschitz-isomorphic to X , is it linearly isomorphic to X ? The answer to this question is negative in full generality, but it is known to be positive in many important cases, and it is open in others. In fact, it is not known whether two separable Lipschitz-isomorphic Banach spaces are always linearly isomorphic. We shall discuss these questions and display some of the relevant techniques from linear and non-linear geometry of Banach spaces.

Martin Mathieu

A non-selfadjoint version of Kadison's noncommutative generalisation of the Banach-Stone theorem

Abstract: A non-selfadjoint version of Kadison's noncommutative generalisation of the Banach-Stone theorem

We discuss a possible non-selfadjoint version of Kadison's celebrated characterisation of isometries on (unital) C^* -algebras and establish it in a number of cases.

Martin Smith

On the products of Toeplitz operators on Bergman spaces

Abstract: It is well known that a Toeplitz operator on the Hardy space is bounded precisely when its symbol is a bounded function. In general, no such characterisation exists for the corresponding operators on the Bergman space, although we do get an analogous result when we restrict ourselves to harmonic symbols. In this talk, we will be concerned with the problem of determining when the product of two Toeplitz operators on the Bergman space is bounded, considering the case when one has an analytic symbol and the other a conjugate analytic symbol.

Michael Dritschel

Interpolation in semigroupoid algebras

Abstract: A seminal result of Agler characterises the so-called Schur-Agler class of functions on the polydisk in terms of a unitary colligation transfer function representation. We generalise this to the unit ball of the algebra of multipliers for a family of test functions over a broad class of semigroupoids. There is then an associated interpolation theorem. Besides leading to solutions of the familiar Nevanlinna-Pick and Cartheodory-Fejer interpolation problems and their multivariable commutative and noncommutative generalisations, this approach also allows us to consider more exotic problems.

Amol Sasane

An abstract approach to the Nehari-Takagi problem

Abstract: The band method approach to interpolation and extension problems originated some twenty years ago in work of Dym and Gohberg. It provided a unified setting for seeing the common features in a collection of problems arising in a variety of settings (finite matrices, function spaces, continuous and discrete-time as well as time-invariant and time-variant systems).

In this talk, we extend this abstract scheme to handle interpolation/extension problems with a prescribe number of negative squares. For example, this variant of Nehari's problem is exactly what arises in the context of model reduction with respect to the Hankel norm in linear system theory.

Alastair Gillespie

Dimension free estimates for operators associated with Riesz transforms