NORTH BRITISH FUNCTIONAL ANALYSIS SEMINAR

A meeting of the North British Functional Analysis Seminar will be held at the University of Newcastle (upon Tyne) from 1pm Friday to 12.30 Saturday, 30–31 October 2009, the two main talks in the Curtis Auditorium, Herschel Building. (This is the main lecture theatre in the Herschel Building, located on the ground floor.)

Prof. William Arveson
University of California at Berkeley, USA

The noncommutative Choquet boundary
2.30pm and 4.00pm on Friday 30 October 2009

Prof. Florin Radulescu
University of Rome “Tor Vergata”, Italy

Ramanujan Peterson Conjectures and von Neumann Algebras
10am and 11.30am on Saturday 31 October 2009

There will also be an introductory lecture for Prof. Arveson’s talks by

Dr. Michael Dritschel, University of Newcastle
1pm on Friday 30 October in room 3.19, Herschel Building

All interested are welcome to attend.

Dr. Joachim Zacharias, NBFAS Secretary, School of Mathematical Sciences
University of Nottingham, NG7 2RD
E-mail: Joachim.Zacharias@nottingham.ac.uk, Fax: 01159514951, Tel: 0115 9514943

NBFAS is registered with the Charity Commissioners. Reg. No: 313424.
Prof. William Arveson

The noncommutative Choquet boundary

Abstract: An operator system is a linear space $S$ of operators on a Hilbert space that contains the identity and is closed under the $*$-operation. Certain irreducible representations of the C*-algebra generated by $S$ have unique "noncommutative representing measures" relative to $S$, and these are the appropriate noncommutative counterparts of points in the Choquet boundary of function systems in $C(X)$. The fact that the noncommutative Choquet boundary is nonempty (and is "sufficiently large") has been recently established for arbitrary separable operator systems, thereby settling a problem of some forty years standing. We discuss the main ideas underlying this general result, and then describe a variety of applications of it to rather concrete problems in operator theory and operator algebras, emphasizing open problems that remain. I plan to start at the beginning and will discuss everything needed from operator space theory.

Prof. Florin Radulescu

Ramanujan Peterson Conjectures and von Neumann Algebras

Abstract: Let $\Gamma = \text{PSL}_2(\mathbb{Z})$, $G = \text{PGL}_2(\mathbb{Q})$. Let $\mathcal{L}(\Gamma)$ be the associated type II$_1$ factor. We prove that there exists a unitarily equivalent model for the classical Hecke operators $T_{\Gamma\sigma\Gamma}$, $\sigma \in G$, acting on Maass forms, as completely positive maps on $\mathcal{L}(\Gamma)$. Let $\pi : B(\ell^2(\Gamma)) \to Q(\ell^2(\Gamma))$ be the projection onto the Calkin algebra. A version of the Akeman-Ostrand property for $G$ over $\ell^2(\Gamma)$ implies that the application mapping $\alpha = [\Gamma\sigma\Gamma]$ into $\pi(T_{\alpha})$ extends to a continuous isomorphism from $\mathcal{H}$ into $Q(\ell^2(\Gamma))$. In particular, the Ramanujan-Peterson conjectures holds true for all eigenvectors, with the exception of a finite number.