

Invariant subspaces and Banach algebras

Leeds, September 1st and 2nd 2016

Abstracts

Real positivity and operator algebras (work with Charles, and some recent applications)

David Blecher (Houston)

In a collaboration with Charles Read spanning many papers we studied operator algebras on Hilbert space, in particular initiating a program concerning (real) positivity in such algebras and related operator spaces. We begin this talk by surveying this work with Charles and its applications, for example to noncommutative peak sets and interpolation. In part this will be a tribute to Charles and his amazing mind. Then we turn to more recent applications of the new ideas, some in progress, for example to noncommutative Hardy spaces and quantum set theory, and elsewhere in operator theoretic functional analysis.

Charles – Student, Colleague, Friend

Béla Bollobás (Cambridge and Memphis)

Before his arrival in Leeds in 2000, Charles Read had been first an undergraduate, then a research student – obtaining his Ph.D. with a thesis entitled *Some problems in the geometry of Banach spaces* – and finally a Teaching Fellow of Trinity College, Cambridge. In the talk I shall present some of the problems he worked on at various stages of his career.

Some papers of Charles Read **Garth Dales (Lancaster)**

I shall talk about results in some papers of Charles. These will include the following:

1. C. J. Read, Discontinuous derivations on the algebra of bounded operators on a Banach space, *J. London Math. Soc.*, 40 (1989), 305–326.
2. C. J. Read, Different forms of the approximation property, typewritten manuscript, about 1996.
3. C. J. Read, When does $K(X)$ split? typewritten manuscript, about 1997.
4. C. J. Read, The algebra of compact operators and its square, typewritten manuscript, about 1997.
5. C. J. Read, Commutative, radical amenable Banach algebras, *Studia Math.*, 140 (2000), 190–212.
6. H. G. Dales, S. R. Patel, and C. J. Read, Fréchet algebras of power series. In *Banach algebras 2009*, (Ed. R. J. Loy, V. Runde, A. Sołtysiak) Banach Center Publications, Institute of Mathematics, Polish Academy of Sciences, Warsaw, 91 (2010), 123–158.

An insight on the Invariant Subspace Problem **Eva A. Gallardo-Gutiérrez (Madrid)**

Probably, one of the most fundamental questions in Operator Theory is the Invariant Subspace Problem, which is still unsolved in Hilbert spaces. In this talk, we will review some approaches to its elusive solution and focus on the work of Charles Read in the Banach space setting ℓ^1 . As a consequence, we will show the existence of a linear bounded operator T on ℓ^1 enjoying the property that no polynomial in T has non-trivial closed invariant subspaces. This is joint work with Charles Read (Leeds).

Approximate amenability and Charles' role in its advancement **Fereidoun Ghahramani (Winnipeg)**

In this talk I will give a survey on the work done on approximate amenability starting from the year 2001 when Rick Loy and I founded this notion, and the profound role Charles has played in its advancement after he and I started our collaboration.

Approximate amenability of tensor products of Banach algebras
Rick Loy (Canberra)

Examples constructed by Ghahramani and Read make it clear that many of the hereditary properties of amenability no longer hold for approximate amenability. After showing that the tensor product of approximately amenable (aa) algebras need not be aa, consideration will be given to conditions under which A and B being aa implies, or is implied by, $A \otimes B$ or $A^\# \otimes B^\#$ being aa. The presence of bounded approximate identities turns out to be significant. The methods also apply to show that if $A \otimes B$ is amenable, then so are A and B , a result proved by Barry Johnson in 1996 under an additional assumption.

This is joint work with Fereidoun Ghahramani.

Analysis of Radical Algebras
George Willis (Newcastle, Australia)

Few general techniques are available for the analysis of general radical Banach algebras. Indeed, it is not clear how complete is the picture of radical algebras given by the known examples. The talk will describe ideas for analysing radical algebras and the role of Charles Read's method of *rapidly increasing sequences* in constructing examples with novel properties.