



Fall 2007 Seminar Series



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Time: 3:00 PM

Room: BSB 3.03.02

Similarity problems and amenability for groups and operator algebras

Abstract: A (locally compact) group is called unitarizable if any (continuous) uniformly bounded representation is unitarizable (i.e., similar to a unitary representation). Dixmier asked already in 1950 whether unitarizable implies amenable (the converse was proved by him and Day independently). Motivated by this, Kadison (1955) formulated the following conjecture:

Any bounded homomorphism $u: A \rightarrow B(H)$, from a C^* -algebra into the algebra $B(H)$ of all bounded operators on a Hilbert space H , is similar to a $*$ -homomorphism, i.e., there is an invertible operator $\xi: H \rightarrow H$ such that $x \rightarrow \xi u(x) \xi^{-1}$ satisfies $\xi u(x^*) \xi^{-1} = (\xi u(x) \xi^{-1})^*$ for all x in A .

These conjectures remain unproved, although many partial results are known. We will survey those as well as more recent results on the closely related notion of length of an operator algebra. In particular, we will explain why length equal to 2 characterizes amenable groups or C^* -algebras. Moreover, we will show that if we can always force the similarity to be in the von Neumann algebra generated by the range, then the group (or the C^* -algebra) must be amenable.

A reception will follow the talk and will be held in BSB 3.03.02