



istanbul matematiksel bilimler merkezi
istanbul center for mathematical sciences

Workshop on Banach Algebras in Honour of Ali Ülger

14.00: Nico Spronk (University of Waterloo) *Idempotents, topologies and ideals*

A classical theorem due to Jacobs, and de Leeuw and Glicksberg, shows that a representation of a group G on a reflexive Banach space may be decomposed into a “returning” subspace and a “weakly mixing” subspace. Furthermore, following Dye, Bergelson and Rosenblatt characterized the weakly mixing vectors as those for which the closure of the weak orbit of the vector contains zero. I wish to exhibit a generalization of these results, inspired, in part, by some work of Ruppert on abelian groups. I will exhibit a bijective correspondence between

- central idempotents in the weakly almost periodic compactification of G ,
- certain topologies on G which are coarser than the ambient topology, and
- certain ideals in the algebra of weakly almost periodic functions.

15.00: Mahya Ghandehari (University of Delaware) *Does $\ell_w^1(S)$ have stable character property?*

Let \mathcal{A} be a Banach algebra. A bounded linear functional ϕ on \mathcal{A} is said to be *approximately multiplicative* if

$$\sup\{|\phi(xy) - \phi(x)\phi(y)| : x, y \in \mathcal{A}, \|x\|, \|y\| \leq 1\} \quad (1)$$

is small. For example if ϕ is multiplicative then the quantity defined in (1) is zero. In this talk, we consider approximately multiplicative functionals on weighted convolution algebras of semi-lattices, and study whether all such functionals arise as small perturbations of multiplicative functionals. A Banach algebra with such a property is said to have *stable characters*.

For a semilattice S and a weight function $w : S \rightarrow [1, \infty)$, we give intrinsic conditions which answer the question whether $\ell_w^1(S)$ has stable characters. Our main result states that if S is a semilattice with “infinite breadth” then one can construct a weight w on S such that $\ell_w^1(S)$ does not have stable characters.

This talk is based on a joint work with Yemon Choi and Hung Le Pham.

16.00: Ebrahim Samei (University of Saskatchewan) *Twisted Orlicz algebras*

Let G be a locally compact group, let $\Omega : G \times G \rightarrow \mathbb{C}$ be a 2-cocycle, and let Φ be a Young function.

We consider the Orlicz space $L^\Phi(G)$ and investigate its algebraic property under the twisted convolution \otimes coming from Ω . We find sufficient conditions under which $(L^\Phi(G), \otimes)$ becomes a Banach algebra or a Banach $*$ -algebra; we call it a *twisted Orlicz algebra*. Furthermore, we study its harmonic analysis properties, such as symmetry, existence of functional calculus, regularity, and having Wiener property, mostly for the case when G is a compactly generated group of polynomial growth.

We apply our methods to several important classes of polynomial as well as subexponential weights and demonstrate that our results could be applied to variety of cases. This is a joint work with Serap Öztop (İstanbul University, Turkey).

Date : Thursday, April 14, 2016

Place : IMBM Seminar Room, Boğaziçi University South Campus

