

BA2007 ABSTRACTS UPDATE (4 July)

Ariel Blanco: *On the weak amenability of $B(X)$* [Wednesday 11 July, 15:40–16:10]

A Banach algebra A is said to be weakly amenable if every continuous derivation from the algebra into its dual is inner. In my talk I shall report on work in progress on the weak amenability of the Banach algebra $B(X)$ of all bounded linear operators on a Banach space X , and some of its subalgebras.

Constantin Costara: *On local irreducibility of the spectrum* [Tuesday 10 July, 15:40–16:10]

Let \mathcal{M}_n be the algebra of $n \times n$ complex matrices, and for $x \in \mathcal{M}_n$ denote by $\sigma(x)$ and $\rho(x)$ the spectrum and spectral radius of x respectively. Let D be a domain in \mathcal{M}_n containing 0, and let $F : D \rightarrow \mathcal{M}_n$ be a holomorphic map. We prove:

- if $\sigma(F(x)) \cap \sigma(x) \neq \emptyset$ for all $x \in D$, then $\sigma(F(x)) = \sigma(x)$ for all $x \in D$;
- if $\rho(F(x)) = \rho(x)$ for all $x \in D$, there exists λ of modulus one such that $\sigma(F(x)) = \lambda\sigma(x)$ for all $x \in D$.

Both results are special cases of theorems expressing the irreducibility of the spectrum $\sigma(x)$ near $x = 0$. Joint work with T. J. Ransford.

Julia Kuznetsova: *Weighted L_p -algebras* [Thursday 12 July, 11:00–11:30]

Further properties of weighted convolution algebras $L_p(G, w)$ are presented. First, we prove an existence theorem: Weighted algebras with $p > 1$ exist on any σ -compact locally compact group, and in the abelian case this is a complete description of all possible groups.

Next, we prove in final form a well-known criterion (proved in special cases subsequently by Edwards, Feichtinger, and Grabiner): $L_1(G, w)$ on a LCG G is an algebra iff w is equivalent to a continuous submultiplicative function.

The rest of the talk is devoted to regular algebras on abelian groups. A commutative algebra is called regular if the image of its Gelfand transform separates points and closed sets (the notion was introduced by G.E.Shilov). Beurling has proved on the real line, and Domar in general case the following criterion: The algebra $L_1(G, w)$ on a LCAG G is regular iff $\sum_{n=1}^{\infty} \ln w(nx)/n^2 < \infty$ for all x .

We show that this result is trivially generalized to the case $p > 1$ under assumption that $L_p(G, w)$ is translation-invariant. If it is not, the series may not converge even in a regular algebra. We also demonstrate some other pathological properties of non-invariant algebras.

Finally, we show that regular algebras $L_p(G, w)$ with $p > 1$ exist on any σ -compact abelian group.

Ebrahim Samei: *2-weak amenability of Beurling algebras* [Friday 6 July, 15:00–15:30]

Let $L_{\omega}^1(G)$ be a Beurling algebra on a locally compact abelian group G . We look for general conditions on the weight which allow the vanishing of continuous derivations of $L_{\omega}^1(G)$. This leads us to introducing vector-valued Beurling algebras and considering the translation of operators on them. This is then used to connect the augmentation ideal to the behavior of derivation space. We apply these results to give examples of various classes of Beurling algebras which are weakly amenable, 2-weakly amenable or fail to be even 2-weakly amenable.

TIME CHANGES: The times of the following lectures have changed since the abstracts were printed. Please consult the timetable for the new times. **Bachar, Bourhim, Bresar, Brooker, Dales, Feinstein, Heath, Laustsen, Pirkovskii, Soltysiak**

WITHDRAWALS: **Azimifard, Shahbazov, Tabaldyev, Turowska**