Representation theory of groups, quantum groups, and operator algebras

University of Copenhagen

1–5 June 2015

Friday

Schedule

All talks are in Auditorium 10.

9–9:45 Petukhov

9:45–10:30 Raum

10:30–11 coffee

11–11:45 Ulrich

11:45–12:30 Tabatabaie

Abstracts

Alexey Petukhov (University of Manchester)

Title: On categories of bounded (g, k)-modules

In this talk I will discuss generalized Harish-Chandra modules [(g, k)-modules] inroduced by I. Penkov, V. Serganova and G. Zuckerman. This notion provides a common view point on several different categories of infinite dimensional g-modules, in particular on Harish-Chandra modules and modules of category $\mathcal{O}$. It is natural to ask what is a structure of categories of such modules and in general the answer is that a block of such a category is equivalent to an appropriate category of perverse sheaves on some stratified space and thus to the category of modules of some finite dimensional algebra. I will show how all this machinery works for $k = gl(V)$ and $g = sp(S^2V + S^2V^*)$.

Sven Raum (RIMS, Kyoto University)

Title: Powers group methods for locally compact groups acting on trees

In this talk we report on our recent work about non-discrete C^*-simple groups. We introduce C^*-simplicity and put it into a representation theoretic context. Then we briefly recall classical and more recent work on C^*-simple discrete groups. Then we present our answer to a question of de la Harpe: "Does there exist a non-discrete second countable locally compact groups which is C^*-simple?". We first show that every C^*-simple group is totally disconnected. Then we present our main result, showing that certain groups acting on trees are C^*-simple. We also give examples of groups satisfying all hypotheses of our work. Our talk finishes with an outline of further results on group von Neumann algebras of non-discrete groups and some perspective on operator algebras associated with locally compact groups.
We intend to keep this talk accessible for an audience with mixed background.

Seyed Mohammad Tabatabaie (University of Qom)

Title: Convolution operators on locally compact hypergroups

In this work, we extend the notion of p-convolution operators and give some results on locally compact hypergroups. Specially for a locally compact hypergroup K, $CV_p(K)$ is a Banach subalgebra of $\mathrm{L}(L^p(K))$, and $T \in CV_p(K)$ if and only if $T(f * \phi) = f * T(\phi)$, for each $f \in L^1(K)$ and $\phi \in L^p(K)$. Also we show that there is a linear injective contraction of the Banach space $M_b(K)$ into the Banach space $CV_p(K)$.

Michaël Ulrich (University of Franche-Comté and University of Greifswald

Title: Towards a better understanding of dual groups: the Haar trace

Dual groups have been first introduced by Voiculescu in the 80s. Unlike quantum groups, they have not yet been thoroughly studied. It is the object of this talk to advance in the understanding of these objects and especially to understand what Haar states should be on them.
