Functional and Harmonic Analysis
(Org: **Benjamin Anderson-Sackaney** and/et **Ebrahim Samei** (University of Saskatchewan))

BENJAMIN ANDERSON-SACKANEY, University of Saskatchewan
Tracial States on Quantum Group C-algebras*

When working with the tracial states on a group C^*-algebra $C^*_\pi(G)$ of a group G, an indispensable fact is the observation that the tracial states on $C^*_\pi(G)$ are exactly the states that are invariant with respect to the conjugation action of G on $C^*_\pi(G)$. An analogous observation for discrete quantum groups had been missing until quite recently: it was established for unimodular discrete quantum groups in a recent paper by Kalantar, Kasprzak, Skalski, and Vergnioux. In this talk we will present a generalization of this result for arbitrary discrete quantum groups and discuss various consequences of this result on the reduced C^*-algebras of discrete quantum groups.

FINLAY RANKIN, Carleton
Quantum automorphisms of commuting squares

Banica defined a compact quantum group of automorphisms for an inclusion of finite-dimensional C^*-algebras and determined its representation theory in certain cases. We generalize Banica's work and assign a compact quantum group of automorphisms to a nondegenerate commuting square consisting of finite-dimensional C^*-algebras and show that it can be realized as a generalized Drinfeld double. Finally, we discuss the representation theory in special cases.

PAWEL SARKOWICZ, University of Waterloo
Embeddings of unitary groups

We discuss unitary groups of C*-algebras with a focus on group homomorphisms between them, and how such homomorphsisms give relationships between the K-theory and traces. With this information, one can use the state-of-the-art K-theoretic classification of embeddings to conclude that there are certain embeddings between C*-algebras if and only if there are appropriate embeddings between their unitary groups.

ERIK SEGUIN, University of Waterloo
Amenability and stability for discrete groups

The notion of a representation of a group G on a Hilbert space $\mathcal{H}$ can be generalized to that of an "approximate representation", in which the usual homomorphism condition $\varphi(xy) = \varphi(x)\,\varphi(y)$ is replaced by some upper bound on $\|\varphi(xy) - \varphi(x)\,\varphi(y)\|$. The supremum over all $x, y \in G$ of this quantity is referred to as the "defect" of the map φ and measures how far φ is from being a genuine representation. It is natural to ask about the stability of this class of maps: namely, when the defect of φ is small, under what conditions is it well-approximated by a genuine representation of G? We discuss the connection between amenability and stability of approximate representations for discrete groups.