MICHAEL BRANNAN, Queen's University

Representations of quantum group convolution algebras

In this talk, we will discuss some aspects of the (non-self-adjoint) representation theory of quantum group convolution algebras $L^1(\mathbb{G})$ on Hilbert spaces. Inspired by the classical case where $L^1(\mathbb{G})$ is the group algebra of a locally compact group, there are many interesting questions that one can ask about such representations. For instance, what conditions on the quantum group $\mathbb{G}$ and a given bounded representation $\pi : L^1(\mathbb{G}) \to B(H)$ ensure that π is similar to a $*$-representation? Another important question is whether or not there exists an analogue of the classical result of Cowling-Haagerup relating representations to Fourier multipliers: Do the matrix elements of π always give rise to completely bounded multipliers of the dual convolution algebra $L^1(\hat{\mathbb{G}})$? We will address these and other questions in this talk, as well as discuss some concrete examples. As expected, the theory of completely bounded maps will play a prominent role in the quantum setting.

This talk is based on joint work with Matthew Daws (Leeds) and Ebrahim Samei (Saskatchewan).