Banach Algebras 2009
A conference supported by the European Science Foundation under the ESF-EMS-ERCOM partnership
July 14-24, 2009, Stefan Banach International Mathematical Center, Będlewo, Poland

Matthew Daws, School of Mathematics, University of Leeds, LEEDS, LS2 9JT, United Kingdom, (matt.daws@cantab.net)

Multipliers and representations

ABSTRACT. We shall discuss, briefly, the general theory of multipliers (the "double centraliser algebra") for Banach algebras. When a Banach algebra $\mathcal{A}$ has a bounded approximate identity, the multiplier algebra $M(\mathcal{A})$ behaves as we would expect by analogy with C*-algebra theory. We shall show some links with Arens products which turn the theory into an essentially algebraic one.

We show that dual Banach algebras interact very well with multipliers. This allows a very simply proof that for a locally compact quantum group $\mathbb{G}$, we have that $M(L^1(\mathbb{G}))$ is a dual Banach algebra, and similarly for the completely bounded version, $M_{cb}(L^1(\mathbb{G}))$. Under a natural condition, the resulting predual is unique. Time permitting, we discuss the role of universal quantum groups.

By work of the author, and Uygul in the completely bounded case, we hence have that $M(L^1(\mathbb{G}))$ is weak*-weak* isometric to a closed subalgebra of $\mathcal{B}(E)$ for some reflexive Banach space E. In the case of the Fourier algebra $A(G)$, we develop a construction of Forrest, Lee and Samei, and show that E can be chosen to be a direct sum of non-commutative L^p spaces.