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Lp group algebras

Let G be a unimodular group, $L^1(G)$ the associated convolution algebra, and $p \in [2, \infty)$. One can complete $L^1(G)$ to a Banach-$*$ algebra by representing it as convolution operators on $L^p(G)$, and taking the norm to be the max of the operator norm, and the operator norm of the adjoint acting on $L^q(G)$, q the conjugate index to p. On the other hand, one can define a C^*-algebra completion of $L^1(G)$ by taking the norm to be the supremum over the norms coming from unitary representations with a dense set of matrix coefficients in $L^p(G)$; this latter construction has been studied recently by Brown-Guentner, Okayasu, Wiersma, and others.

I'll discuss what these two constructions have to do with each other, and what one can say (at least sometimes) about the K-theory of the associated algebras. This will be based partly on work of Benben Liao and Guoliang Yu (which I was not involved in), partly on joint work with Alcides Buss and Siegfried Echterhoff, and partly on joint work with Ján Špakula.