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*Operator analogues of various algebras arising in abstract harmonic analysis*

In the framework of his concept of an amenable representation, M. B. Bekka has introduced an operator version of the  $C^*$ -algebra  $LUC(G)$  of bounded left uniformly continuous functions on a locally compact group  $G$ . This  $C^*$ -subalgebra of  $B(L_2(G))$ , denoted by  $X(L_2(G))$ , contains both  $LUC(G)$  and the compact operators on  $L_2(G)$ . Using my convolution type product of trace class operators on  $L_2(G)$ , I present a structural analysis of  $X(L_2(G))$ . Moreover, the dual  $X(L_2(G))^*$  naturally becomes a (completely contractive) Banach algebra. The latter admits a completely isometric representation as completely bounded operators on  $B(L_2(G))$ ; as such, it gives new insight into the representation theoretical programme (carried out by M. Neufang, Z.-J. Ruan and N. Spronk) of studying algebras in abstract harmonic analysis as subalgebras of  $CB(B(L_2(G)))$ —such as the measure algebra and the completely bounded multipliers of the Fourier algebra. Finally, the investigations of  $X(L_2(G))^*$  lead to what may be considered as a non-commutative analogue of the measure algebra. Extensions of the results to locally compact quantum groups are also discussed.

This is joint work with Z.-J. Ruan.