

*Banach Algebras 2009*

*A conference supported by the European Science Foundation under the  
ESF-EMS-ERCOT partnership*

*July 14-24, 2009, Stefan Banach International Mathematical Center, Będlewo,  
Poland*

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***Banach modules associated with locally compact quantum groups***

ABSTRACT. Let  $\mathbb{G}$  be a von Neumann algebraic locally compact quantum group as introduced and studied by J. Kustermans and S. Vaes. Then the right fundamental unitary operator of  $\mathbb{G}$  defines a multiplication  $\triangleright$  on  $T(L_2(\mathbb{G}))$ , the space of trace class operators on  $L_2(\mathbb{G})$ , such that  $(T(L_2(\mathbb{G})), \triangleright)$  is a completely contractive Banach algebra and the quantum group algebra  $L_1(\mathbb{G})$  is a quotient algebra of  $(T(L_2(\mathbb{G})), \triangleright)$ . We shall discuss recent joint work with M. Neufang and Z.-J. Ruan on some Banach  $(T(L_2(\mathbb{G})), \triangleright)$ -modules, their representations, and their relations with Banach  $L_1(\mathbb{G})$ -modules.