

A NOTE ON ANALYTIC SUBALGEBRAS OF VON NEUMANN ALGEBRAS

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Von Neumann algebras can be viewed, on one hand, as “noncommutative L^∞ algebras”, and on the other hand, as “infinite dimensional matrix algebras”. When looking for the “appropriate” nonselfadjoint subalgebras of a von Neumann algebra one is led, therefore, to look for a class of algebras that would include “natural” subalgebras of L^∞ and of the $n \times n$ complex matrices.

Motivated by Arveson’s spectral analysis of groups of automorphisms on a von Neumann algebra, Loeb and Muhly and, independently, Kawamura and Tomiyama defined and studied the analytic subalgebras of von Neumann algebras. This class of algebras is large enough to include nest subalgebras and abelian H^∞ algebras and yet is tractable enough to provide interesting results. Loeb and Muhly showed that any analytic crossed product determined by an action of discrete abelian groups is the analytic subalgebra determined by the dual action of compact abelian groups. The one of the aim of this talk is to reveal the relation between analytic crossed products and analytic subalgebras. And we apply these discussions for the structure analysis of subalgebras of crossed products which contains an analytic crossed product.

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