

On the representation of elements of a von Neumann algebra in the form of finite sums of products of projections. III. Commutators in C^* -algebras

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Abstract

It is proved that every skew-Hermitian element of any properly infinite von Neumann algebra can be represented in the form of a finite sum of commutators of projections in this algebra. A new commutation condition for projections in terms of their upper (lower) bound in the lattice of all projections of the algebra is obtained. For the full matrix algebra the set of operators with canonical trace zero is described in terms of finite sums of commutators of projections and the domain in which the trace is positive is described in terms of finite sums of pairwise products of projections. Applications to AF-algebras are obtained. © 2008 RAS(DoM) and LMS.

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