

Factorial states, upper multiplicity and norms of elementary operators.

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We discuss recent work with Douglas Somerset and Richard Timoney that aims to localise the connection between matricial norms of elementary operators and the weak*-approximation of factorial states.

Let π be an irreducible representation of a C^* -algebra A . The weak*-approximation of factorial states associated to π by type I factorial states of lower degree is closely related to the value of the upper multiplicity $M_U(\pi)$ of π . It follows that if $M_U(\pi) > 1$ and T is an elementary operator on A then $\|T^\pi\|_k \leq \|T\|_n$ for certain $k > n$, and similarly that the n -positivity of T implies the k -positivity of T^π (where T^π is the induced operator on $\pi(A)$).

These localizations at π lead to new proofs of various characterizations of the class of antiliminal-by-abelian C^* -algebras in terms of factorial states and elementary operators. As an amusing by-product of this work, we observe somewhat belatedly that *antiliminal-by-abelian* is equivalent to *abelian-by-antiliminal*.