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Homomorphisms of subalgebras of Fourier–Stieltjes algebras

Let G and H be locally compact groups, and let A be a closed translation-invariant subalgebra of $B(G)$, the Fourier–Stieltjes algebra of G. A homomorphism $\varphi : A \to B(H)$ is determined by a certain mapping $\alpha : E \subseteq H \to \Delta(A)$, where $\Delta(A)$ is the Gelfand spectrum of A; we write $\varphi = j_\alpha$. When A is the Fourier algebra $A(G)$, its spectrum is just G, and in this case many authors, including P. Cohen, M. Ilie, N. Spronk, M. Daws and H.L. Pham, have studied the old problem of characterizing when φ is (completely) positive/contractive/bounded in term of the associated map α. In general, however, $\Delta(A)$ can be quite complicated. I will identify a (often large) Clifford subsemigroup Δ_Z of $\Delta(A)$ and, when α maps into Δ_Z, discuss the relationship between α and $\varphi = j_\alpha$. I will describe $\Delta(A)$ when A is a type of ℓ^1-direct sum of subalgebras graded over a semilattice, discuss examples, and describe for such A when $\varphi : A \to B(H)$ is completely positive and completely contractive. In several cases, including when A is any (generalized) spine algebra, $\Delta_Z = \Delta(A)$, and we obtain complete characterizations of these homomorphisms in terms of α. This talk is based on joint work with N. Spronk and A. Thamizhazhagan.