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Distal properties of totally disconnected locally compact groups of polynomial growth and certain ideals in group algebras

Given a locally compact group G let $\mathcal{J}(G)$ denote the set of closed left ideals in $L^1(G)$, of the form $J_\mu = [L^1(G) * (\delta_e - \mu)]^-$ where μ is a probability measure on G . Given a closed subgroup H of G let $L_0^1(G, H)$ denote the kernel of the canonical mapping from $L^1(G)$ to $L^1(G/H)$. When G is totally disconnected and has polynomial growth, we prove that the following conditions are equivalent:

- (i) $\mathcal{J}(G) = \{L_0^1(G, H) ; H \text{ is a closed subgroup of } G\}$;
- (ii) the group of inner automorphisms of G acts distally on G ;
- (iii) every inner automorphism of G is distal;
- (iv) the contraction subgroup of every inner automorphism of G is trivial;
- (v) G is a SIN group.

This is a joint work with C. R. E. Raja.