

# Convolution dominated operators on compact extensions of abelian groups

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## Abstract

If  $G$  is a locally compact group,  $CD(G)$  the algebra of convolution dominated operators on  $L^2(G)$ , then an important question is: Is  $\mathbb{C} \cdot 1 + CD(G)$  (or  $CD(G)$  if  $G$  is discrete) inverse-closed in the algebra of bounded operators on  $L^2(G)$ ?

In this note we answer this question in the affirmative, provided  $G$  is such that one of the following properties is satisfied.

- (1) There is a discrete, rigidly symmetric, and amenable subgroup  $H \subset G$  and a (measurable) relatively compact neighbourhood of the identity  $U$ , invariant under conjugation by elements of  $H$ , such that  $\{hU : h \in H\}$  is a partition of  $G$ .
- (2) The commutator subgroup of  $G$  is relatively compact. (If  $G$  is connected, this just means that  $G$  is an IN group.)

All known examples where  $CD(G)$  is inverse-closed in  $B(L^2(G))$  are covered by this.