ON THE STRUCTURE OF MAXIMALLY ALMOST PERIODIC GROUPS

BY THEODORE W. WILCOX

Communicated by Richard Arens, May 16, 1967

1. **Introduction.** A topological group G is said to be maximally almost periodic if the continuous almost periodic functions separate points in G, or equivalently if the continuous finite-dimensional unitary representations of G separate points in G. See [**4**], or [**2**, §18]. Throughout this note, we use "*representation*" to mean "*continuous finite-dimensional unitary representation*". Our purpose here is to announce some results concerning maximally almost periodic (MAP) groups which are independent of the classical theorem of Freudenthal-Weil which states that a locally compact connected group is MAP if and only if it is the direct product of $\boldsymbol{R}^n$ and a compact group [**6**, §§30, 31].

The results in this note comprise a portion of the author's doctoral dissertation. Detailed proofs of these and other results will appear at a later date. The author thanks his thesis advisor, Professor Edwin Hewitt, and Professor Lewis Robertson for all their assistance and encouragement.[1]

2. **Definitions and notation.** Let K be a (Hausdorff but not necessarily locally compact) topological group, G a normal subgroup of K and $T=\{t(x): x\in K\}$ be the group of topological automorphisms of G which are restrictions to G of inner automorphisms of K. Let $\hat{K}$ (and $\hat{G}$ resp.) be the space of equivalence classes of irreducible representations of K (and G resp.). In an investigation of $\hat{K}$ it is natural to consider the action on $\hat{G}$ induced by T. For example, see [**1**]. Let U be a representation, $U\in\sigma\in\hat{G}$, define $t^*(x)U=U\circ t(x)^{-1}$ and define $t^*(x)\sigma$ to be the equivalence class of $t^*(x)U$. If the set $\{t^*(x)\sigma: t(x)\in T\}$ is finite, then σ is said to be *finitely orbited by* T. Let $F(\hat{G},T)$ be the set $\{\sigma\in\hat{G}: \sigma$ is finitely orbited by $T\}$. The *von Neumann kernel* of a group is the intersection of all kernels of representations of that group.

3. **Results.**

THEOREM 1. *Let K, G and T be as above. If $U\in\sigma\in\hat{K}$ and if $y\in G$ are such that $U_y\neq I$, then there exists an element of $F(\hat{G}, T)$ which separates*

[1] This research was supported by a NASA Predoctoral Traineeship at the University of Washington.