

THE GROUP OF BOUNDED ELEMENTS AND FINITE INVARIANT BOREL MEASURES IN A LIE GROUP

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The main purpose of this thesis is to prove the following fact and a related conjecture raised by F. P. Greenleaf and M. Moskowitz.

THEOREM. Let G be an analytic group such that $R \cap S$ is finite, where R, S denote the solvable radical and a Levi factor of G , respectively. Then, for an arbitrary subgroup $A \subset \text{Aut}(G)$,

- (i) $B(G, A)$ is closed,
- (ii) there is an A -invariant layering from G down to $B(G, A)$,
- (iii) any finite A -invariant Borel measure μ has $\text{supp } \mu \subset B(G, A)$, conversely, if $x \in B(G, A)$ there is such a measure μ with $x \in \text{supp } \mu \subset B(G, A)$.

CONJECTURE. Let G be a semisimple analytic group, $Z(G)$ its center. Let $\pi : G \rightarrow G/Z(G) = G_1$ be the canonical epimorphism. For $x \in G$, $y = \pi(x) \in G_1$, let C_x, C_y be their conjugacy classes and let $\overline{C}_x, \overline{C}_y$ be their closures, respectively. Then $\pi : \overline{C}_x \rightarrow \overline{C}_y$ is surjective and proper.

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