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Section:

7. Lie Groups and Lie Algebras

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Quasi-Symmetry and Amenability

A map $T\ S \to \mathcal{L}(H)$ is a (C,ε)-*quasi-representation* (*qrn*) of a group G in a Hilbert space H if $\|T(gh) - T(g)T(h)\| \leq \varepsilon$, $g, h \in G$, and $\|T(g)\|, \|T(g)^{-1}\| \leq C$, $g \in G$. A group G is said to be *stably representable* if, for any real $C \geq 1$ and $\varepsilon > 0$, there exists $\delta > 0$ such that, for any (C,ε)-qrn of G in a Hilbert space, there exists a representation R of G in the same space with $\|T(g) - R(g)\| \leq \varepsilon$ and $\|T(g)^{-1} - R(g)^{-1}\| \leq \varepsilon$, $g \in G$. It is proved that if an almost connected locally compact group is stably representable, then it is amenable (the converse follows from a result of B. E. Johnson), and related topics on the second real bounded cohomology of connected Lie groups are discussed.