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The Eberlein Compactification of Locally Compact Groups

Given a locally compact group $G$, the Eberlein compactification $G^e$ is the spectrum of the uniform closure of the Fourier-Stieltjes algebra $B(G)$. It is a semitopological compactification and thus a quotient of the weakly almost periodic compactification $G^w$. We aim to study the structure and complexity of $G^e$. On one hand, for certain abelian groups, weak*-closed subsemigroups of $L^\infty[0,1]$ may be realised as quotients of $G^e$, thus showing that $G^e$ is large and complicated in these situations. Conversely, the structures of $G^e$ for certain semidirect product groups show that aspects of the structure of $G^e$ can be quite simple. The levels of complexity of these structures mimic those of $G^w$, yet many questions about the sizes of their differences remain.