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Symmetry of Beurling–Fourier algebras on compact groups

For a compact group G, I will define the Beurling–Fourier algebras $A^p_\omega(G)$ on G, for weights $\omega\colon \widehat{G} \to \mathbb{R}^{>0}$ and $1 \leq p \leq \infty$. The classical Fourier algebra of G corresponds to the case $p = 1$ and ω is the constant weight 1; when $G = \mathbb{T}$, $A^p_\omega(G) = \ell^1(\mathbb{Z}, \omega)$, the classical Beurling algebra on $\mathbb{Z}$. To define the spectrum of G, we require development of an abstract Lie theory which is built from Krein–Tannaka duality, and was formalized separately by McKennon, and Cartwright and McMullen, in the 1970s. This Lie theory allows us for any to develop the complexification $G_{\mathbb{C}}$, even for non-Lie G. The Gelfand spectrum $\Sigma_{A^p_\omega(G)}$ can always be realized as a subset of $G_{\mathbb{C}}$.

I will consider the following question: When is $\Sigma_{A^p_\omega(G)}$ symmetric? I will present evidence towards the following conjecture. *The algebra $A^p_\omega(G)$ is symmetric if and only if the weight ω is subexponential (in which case $\Sigma_{A^p_\omega(G)} \cong G$).*

This is part of joint work, in progress, with J. Ludwig and L. Turowska.