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Spectra of Beurling-Fourier Algebras

Beurling-Fourier algebras are analogues of the Beurling algebra in the non-commutative setting. These algebras for general locally compact groups were defined by Lee and Samei as the predual of certain weighted von Neumann algebras, where a weight on $\widehat{G}$ is defined to be a suitable unbounded operator affiliated with the group von Neumann algebra. In this talk, we present the general definition of a Beurling-Fourier algebra, and discuss how their spectra can be computed. In particular, we determine the Gelfand spectrum of Beurling-Fourier algebras for some representative examples of Lie groups, such as $\mathrm{SU}(n)$, the Heisenberg group, and the Euclidean motion group, emphasizing the connection of spectra to the complexification of underlying Lie groups. This talk is based on joint work with Lee, Ludwig, Spronk, and Turowska.