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Weighted convolution algebras in the dual form

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Convolution algebra $L^1(G)$ associated to a locally compact group G is a central example of Banach algebras, which is the pre-dual of a (commutative) von Neumann algebra $L^\infty(G)$. There is another (commutative) Banach algebra associated to G, namely, the Fourier algebra $A(G)$. $A(G)$ is regarded as a dual object of $L^1(G)$, but much more related to operator algebra theory since it is the pre-dual of the group von Neumann algebra $VN(G)$.

On the other hand, weighted versions of $L^1(G)$, the classical Beurling algebras, provides an interesting class of Banach algebras. In this talk we introduce the class of Beurling-Fourier algebras on locally compact groups, which are dual versions of weighted convolution algebras. And we will see the behavior of these new examples of Banach algebras is quite different from that of Fourier algebras focusing on Arens regularity. As in the case of Fourier algebra $A(G)$ operator algebra theory plays a crucial role here.