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Convolution inequalities in locally compact groups and unitary systems

We consider certain convolution inequalities for positive Radon measures on a locally compact group G, also assumed σ-compact. These appear naturally in connection with Bessel or frame inequalities for certain unitary systems U_t, $t \in G$, of operators acting on a Hilbert space $\mathcal{H}$ and associated with a positive Radon measure μ on G and an analyzing vector $\psi \in \mathcal{H}$. Using this approach, we obtain some general results in the form of inequalities relating the Bessel or frame constants to other constants defined in terms of the measure μ and the analyzing vector ψ.