INVARIANCE OF THE SCHWARTZ CLASS UNDER FOURIER-GELFAND TRANSFORMS ON NILPOTENT LIE GROUPS

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A nilpotent Lie group can be roughly thought of as the same as R^n, only with different translations, a different convolution, etc. The most notable example in such class is the Heisenberg group. Under certain conditions, a manageable notion of Fourier transform is available, and various analogies with the ordinary Fourier transform have been detected in the last 30 years (e.g. correspondence between Calderón-Zygmund kernels and Mihlin-Hörmander multipliers). Here we present, for the Heisenberg group, the analogue of a fundamental property of the Fourier transform in R^n: the fact that it maps the Schwartz onto itself. This is joint recent work with F. Astengo and B. Di Blasio.