

# **Time-frequency transforms in Euclidean spaces**

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Time-frequency analysis can be described as Fourier analysis simultaneously both in time and in frequency. A time-frequency transform is a sesquilinear mapping from a family of test functions in a Euclidean space to functions in the time-frequency plane. The class of time-frequency transforms is further restricted by imposing conditions stemming from basic transformations of signals and those which an idealized energy density should satisfy. We characterize the time-frequency transforms in terms of the corresponding pseudo-differential operator quantizations and integral kernel conditions.