

Time-frequency partitions in continuous and discrete settings

In this talk I will address the problem of locality in time-frequency representations in both the discrete and continuous setting. The continuous setting is closely related to the concept of time-frequency localization operators and we will first show why time-frequency localization, even on a large domain, is always approximate. On the other hand, the local definition can be given a global meaning by considering a whole family of time-frequency shifted localization operators.

The characterization of function spaces obtained from the localization operators is intimately linked with the concept of Gabor (Banach) multi-window frames. On the other hand, we may be interested in constructing frames with a more flexible time-frequency resolution an idea that is heavily motivated from applications (in sound analysis). The concept of Quilted Frames was introduced to incorporate the flexibility of local adaptation. It will be introduced and some results and problems will be presented.