A QUANTITATIVE COMPARISON OF NON−PARAMETRIC TIME−FREQUENCY REPRESENTATIONS (WedPmPO3)

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Abstract :

In this paper we compare a variety of non−parametric time−frequency methods to determine the best time−−frequency representation (TFR) for a collection of signals. These methods include quadratic time−frequency transforms, atomic decomposition and adaptive quadratic time−frequency transforms. The performance measures used to assess the TFRs include; two−−dimensional correlation, IF correlation and time−frequency resolution. Synthetic signals with different time−frequency characteristics were used in the comparison to show the strengths and weaknesses of the different time−frequency methods. It was determined that adaptive quadratic time−frequency representations provide the best overall performance and should be used if no a priori information about the time−frequency characteristics of a signal is known.

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