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The Fourier ratio, probabilistic method and signal recovery

We are going to discuss the ratio of the L1 to L2 norms of the Fourier transform in a variety of different contexts as a proxy for the complexity of a signal. We are going to see that if the Fourier ratio is small, the signal can be well-approximated by a trigonometric polynomial of a low degree. Applications to signal recovery and connections with restriction theory of the Fourier transform will be discussed.