

Spectral Analysis of Irregular Samples of Multidimensional Signals

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Abstract

The spectrum of irregular samples of a two-dimensional (2-D) signal is derived using nonharmonic Fourier series expansion. The assumption on the set of irregular samples is general except that this set should deviate from a set of uniform samples by a finite amount. The spectral analysis suggests a simple method to reconstruct a 2-D signal from nonuniform samples. The accuracy of the recovery technique increases when the nonuniform samples do not deviate drastically from the uniform sampling set. The same analysis can be extended to n -dimensional signals.