**Paper 3.3**

# A wavelet based method for the estimation of the power spectrum from irregularly sampled data

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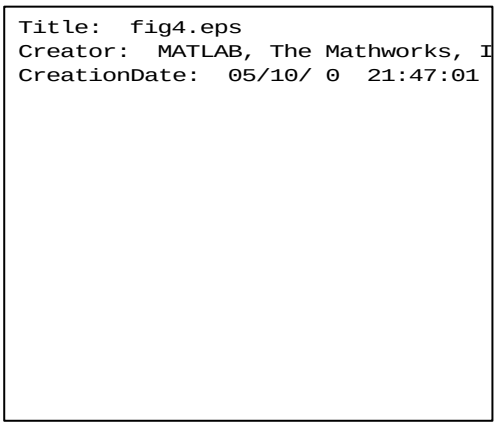
## ABSTRACT

The problem of estimating the power spectrum from irregularly sampled data appears in many technical applications. Recently it has been studied by many authors. For the current status of the problem see for instance Benedict *et.al*. (1998) and Ware (1998) and references therein.

Most techniques for spectrum estimation can be classified into one of the following groups: slotting technique and cosine transform, direct transformation and reconstruction with uniform resampling plus FFT.

In this paper we present a method of the third group above. We reconstruct a signal using a wavelet approximation, resample the approximated signal uniformly and finally compute the power spectrum with the standard FFT. The figure below gives an example of an irregularly sampled data and its wavelet approximation.




A good exposition on wavelets is for example Mallat (1998).