An Adaptive Subband Decomposition Method for High Resolution Nuclear Magnetic Resonance Spectroscopy*

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Abstract

In this paper, a parametric spectral estimation method using an adaptive subband decomposition approach is presented. The subband decomposition is performed on each band until a measure of whiteness of the resulting residuals is reached. Using Monte Carlo simulations, the results achieved with the proposed method are compared to those obtained with other methods performing fullband and subband estimations, in the case of noisy damped exponentials. Application to a real-world nuclear magnetic resonance signal points out the advantages of the method.

Key words: Damped sinusoid; Subband estimation; Whiteness test; Adaptive subband decomposition.

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