An Adapted Filter Bank for Frequency Estimation*

El-Hadi Djermoune and Marc Tomczak

Centre de Recherche en Automatique de Nancy – CRAN UMR-CNRS 7039
Université Henri Poincaré Nancy 1, Boulevard des Aiguillettes
BP. 239 – 54506 Vandoeuvre-lès-Nancy Cedex, France
firstname.lastname@cran.uhp-nancy.fr

Abstract

In this paper, a parametric spectral estimation method using an adapted filter bank is presented. The subband decomposition is performed classically through filtering and decimation stages. The decision about stopping or carrying on the decomposition of a given node is taken according to a new stopping rule. The latter uses a measure of whiteness of the residuals resulting from the node considered. 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 exponentials. The analysis points out the advantages of the proposed method.

Key words: Frequency estimation; Subband decomposition; Stopping rule; Spectral flatness measure.

*12th European Signal Processing Conference (EUSIPCO'04), Vienna (Austria), to appear.