On the Relationship between Pseudo-QMF Designs and Perfect-Reconstruction Solutions for Modulated Filter Banks

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ABSTRACT

In this paper the classical pseudo-QMF approach for modulated filter banks is related to a recently published general perfect reconstruction (PR) description for integer oversampling ratios. It is shown that a pseudo-QMF prototype approximately satisfies the PR conditions, where the error depends on the remaining linear distortions and on the stopband attenuation of the prototype. For the nonsubsampled case the pseudo-QMF and the PR condition are equivalent. Furthermore, an upper bound for the PRapproximation error can be given, when the maximum allowable deviation from the ideal flat frequency response of the analysis-synthesis system is specified.