

DESIGN OF ALLPASS-BASED NON-UNIFORM OVERSAMPLED DFT FILTER BANKS

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ABSTRACT

In this paper we address a maximally decimated IIR DFT filter bank, where all polyphase components are replaced by allpass filters. Generally, a perfect reconstruction (PR) solution leads to a synthesis filter bank with unstable subband filters. As a novelty we show that by using closed-form FIR phase compensation filters as polyphase components in the synthesis filter bank we obtain a stable near-PR analysis-synthesis system. Furthermore, the remaining linear and aliasing distortions only depend on the overall system delay, and can be made arbitrarily small.