

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

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ABSTRACT

In this paper we address design and properties of an oversampled non-uniform DFT filter bank derived by an allpass frequency transform from its uniform version. The novel synthesis bank utilizes only stable FIR filters, which can be designed via closed-form expressions. The overall analysis-synthesis system leads to a nearperfect-reconstruction solution, where the phase compensation error can be made arbitrarily small at the expense of additional system delay. Furthermore, we also address the case of different subsampling factors in the subbands. The filter bank design is carried out by utilizing a lifting factorization for the prototypes, which has the advantage that the overall system delay can be controlled in an efficient way.