

论文

无完全重构约束的两通道自适应FIR滤波器组设计

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摘要

该文研究了在无完全重构约束情况下两通道自适应FIR无混叠滤波器组的时域设计方法。由于放松了对完全重构的约束, 子带编码器的失真由系统失真和量化失真两部分构成。在整体比特数和输入过程给定的情况下, 本文通过优化滤波器系数, 使得子带编码器的整体失真达到最小, 实现提高其编码增益的目的。后面的设计实例验证了该方法的有效性。

关键词 [靠近无完全重构约束](#) [滤波器组](#) [子带编码增益](#)

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Design of Two-Channel Signal-Adapted FIR Filterbanks without Perfect Reconstruction Constraints

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Abstract

This paper investigates the time-domain design method of two-channel signal-adapted FIR alias-free filterbanks without Perfect Reconstruction (PR) constraints. For subband coders based on filterbanks without PR constraints, the total distortion is composed of two parts: the systemic distortion and quantization distortion. For a given total bit budget, the minimization of the total distortion is an unconstrained nonlinear programming. Due to its high nonlinearity, the design results greatly depend on selection of initial filterbanks. Two approaches to select the initial filterbanks, the associated algorithm and designs of several examples are given in this paper. The obtained signal-adapted filterbanks achieve larger subband coding gains than the existing methods, which verifies our method is effective.

Key words [Without perfect reconstruction constraints](#) [Filter-banks](#) [Subband coding gain](#)

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