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基于Cayley变换的紧支撑二元正交小波滤波器组的构造

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CONSTRUCTION OF COMPACTLY SUPPORTED BIVARIATE ORTHOGONAL WAVELET FILTER BANKS BASED ON THE CAYLEY TRANSFORM

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摘要

构造正交滤波器组, 在多相域里就等价于构造仿酉矩阵, 而仿酉矩阵的构造涉及到非线性方程组的求解.通过对*Cayley*变换的研究, 把仿酉矩阵的构造转换为更易构造的仿斜厄米特矩阵, 基于这种变换构造了二元紧支撑正交小波滤波器组, 并给出了算例.

关键词: 正交小波滤波器组 仿酉矩阵 Cayley变换

Abstract:

In the polyphase domain, construction of orthogonal filter banks is equivalent to constructing paraunitary matrices, which leads to solving sets of nonlinear equations. By the cayley transform of study, constructing paraunitary matrices is converted to constructing para-skew-Hermitian matrices, which are much easier to solve, then constructing compactly supported bivariate orthogonal wavelet filter banks based on the cayley transform, and one example is also given.

Key words: Orthogonal Wavelet Filter Banks Paraunitary Matrix Cayley Transform

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