论文

正交小波变换的向量空间算法

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摘要　　本文揭示了一个事实，小波不仅可构成Ｌ２空间中的正交基，小波分解与重构滤波还可产生Ｎ维空间中的正交基．在本文提出修改的小波变换算法之下，Ｎ点信号的小波变换等价于Ｎ维空间中的正交变换．用该算法进行信号或图象压缩，无需对信号或图象进行周期延拓，可严格地在Ｎ维空间中进行．

关键词　　小波　小波变换　信号压缩

分类号

THE VECTOR-SPACE ALGORITHM OF ORTHONORMALWAVELET TRANSFORM

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Abstract　In this paper it is revealed that not only the wavelet can constitute an orthonormal basis for L2(R), but also its decomposition and reconstruction filters {hn}, {gn} can generate an orthonormal basis for RN. By using the modified algorithm of wavelet transform suggested in the paper, it is shown that a wavelet transform of signals with N samples is equivalent to an ortlionormal transfrom in RN. Then the signal or picture compression based on the wavelet transform can be completly operated in RN without the help of the periodic extension of signal or picture.

Key words　Wavelet　wavelet transform　signal compression.

DOI:

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