

SPECTRAL APPROXIMATION ORDERS OF MULTI DIMENSIONAL NONSTATIONARY BIORTHOGONAL SEMI -MULTIRESOLUTION ANALYSIS IN SOBOLEV SPACE

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摘要

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SPECTRAL APPROXIMATION ORDERS OF MULTI DIMENSIONAL NONSTATIONARY BIORTHOGONAL SEMI -MULTIRESOLUTION ANALYSIS IN SOBOLEV SPACE

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Abstract Subdivision algorithm (Stationary or Non-stationary) is one of the most active and exciting research topics in wavelet analysis and applied mathematical theory. In multidimensional non-stationary situation, its limit functions are both compactly supported and infinitely differentiable. Also, these limit functions can serve as the scaling functions to generate the multidimensional non-stationary orthogonal or biorthogonal semi-multiresolution analysis (Semi-MRAs). The spectral approximation property of multidimensional non-stationary biorthogonal Semi-MRAs is considered in this paper. Based on nonstationary subdivision scheme and its limit scaling functions, it is shown that the multidimensional nonstationary biorthogonal Semi-MRAs have spectral approximation order r in Sobolev space $H^s(\mathbb{R}^d)$, for all $r \geq s \geq 0$.

Key words [Nonstationary subdivision algorithm](#) [Biorthogonal Semi-MRAs](#) [Wavelets](#) [Spectral approximation](#) [Sobolev space](#).

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