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INTERPOLATING ORTHOGONAL BASES OF N-SEPARATE MRAS AND WAVELETS

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Interpolating orthogonal wavelet bases are constructed with the use of several scaling functions. In the classical case, a basis of the space $L^2(\mathbb{R})$ is formed by shifts and compressions of a single function ψ. In contrast to the classical case, we consider several bases of the space $L^2(\mathbb{R})$, which are formed by shifts and compressions of n functions ψ^s, $s = 1, \dots, n$. The n-separate wavelets constructed by the author earlier form n orthonormal bases of the space $L^2(\mathbb{R})$. In 2008, Yu.N. Subbotin and N. I. Chernykh suggested a method for modifying the Meyer scaling function in such a way that the basis formed by it is simultaneously orthogonal and interpolating. In the present paper we propose a method for modifying the masks of n-separate scaling functions from a wide class in such a way that the resulting new scaling functions and wavelets remain orthogonal and at the same time become interpolating.

Keywords: orthogonal wavelet, interpolating wavelet, scaling function, basis, multiresolution analysis, mask of a scaling function, n-separate wavelet.

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