The use of canonical number systems in the problem of constructing nonseparable Haar-like wavelets

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Abstract

The paper generalizes the method of constructing a Haar-like orthonormal wavelet basis over $L^2(R^n)$ based on the characteristic functions of fundamental domains of number systems. In the prototype work, the construction of a Haar-like wavelet basis was based on the existence of a positional number system in the ring of Gaussian integers. In this paper, the authors consider the construction of a Haar-like wavelet basis over $L^2(R^2)$ associated with canonical number systems in other quadratic fields.

<u>*Keywords:*</u> Haar-like wavelets, Haar-type, wavelet basis, number system, Gaussian integers, quadratic fields.

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