

Wavelet Bases Adapted to Pseudodifferential Operators

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Abstract

This paper is concerned with the numerical treatment of pseudodifferential equations in \mathbb{R}^2 , employing wavelet Galerkin methods. We construct wavelet bases adapted to a given pseudodifferential operator in the sense that functions on different refinement levels are orthogonal with respect to a certain bilinear form induced by the operator.

Key Words: Wavelets, biorthogonal bases, pseudodifferential operators, Galerkin methods.

AMS Subject Classifications: 42C05, 47G30, 65N30.