

DYADIC NON LOCAL DIFFUSION IN METRIC MEASURE SPACES

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Abstract

In this paper we solve the initial value problem for the nonlocal diffusion generated by the space fractional derivative induced by the dyadic tilings of M. Christ on a space of homogeneous type. We consider the problems of pointwise and norm convergence to the initial data. The main tool is the use of the Haar system induced by a dyadic tiling, which is actually the set of eigenfunctions for the fractional derivative operator.

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Key Words and Phrases: nonlocal diffusions, dyadic fractional derivatives, space of homogeneous type, Haar basis