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On the L^p Solutions of Dilation Equations

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Abstract: Let A \in M_n ({\Bbb Z}) be an expanding matrix with | {\det (A)} | = q and let K = {k_1 \cdots k_q} \subseteq $\{\Bbb R\}^n$ be a digit set. The set \cal T =:\cal T(A,K) = {$\sum_{i=1}^{\infty}$ A^{-i} k_{j_i} : k_{j_i} \in K} \subset $\{\Bbb R\}^n$ is called a {\it self-affine tile} if the Lebesgue measure of \cal T is positive. In this note, we consider dilation equations of the form f(x) = $\sum_{j=1}^q$ c_j f(Ax- k_j) with q=$\sum_{j=1}^q$ {c_j}, c_j\in {\Bbb R}, and prove that this equation has a nontrivial L^p solution (1\leq p \leq \infty) if and only if c_j=1 \forall j\in {1,...,q} and \cal T is a tile.

Key Words: Dilation equtions, tiles, wavelets, self-similar measures 433 Zülfigar AKDOĞAN GOP Üniversitesi, Fen Edebiyat Fakültesi, Tokat-TURKEY Abdullah MAĞDEN Atatürk Üniversitesi, Fen Edebiyat Fakültesi, Erzurum-TURKEY Some Characterization of Curves of Constant Breadth in E\(^{n} \) Space

Abstract: In this paper, the concepts concerning the space of constant breadth were extended to E^n-space. An approximate solution of the equation system which belongs to this curve was obtained. Using this solution vectorial expression of the curves of constant breadth was obtained. The relation $\int_0^{2\pi}$\widetilde{f}(s)\,ds=0 between the curvatures of curves of constant breadth in E^n was obtained. Key Words and Phrases: Curvature, Constant Breadth, Integral Characterization of Curve

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