

Meeting: 1001, Evanston, Illinois, SS 12A, Special Session on Iterated Function Systems and Analysis on Fractals

1001-26-54 **Ka-Sing Lau*** (kslau@math.cuhk.edu.hk), Dept. Math., The Chinese Univ. of Hong Kong, Hong Kong, Peoples Rep of China, and **King Shun Leung**, Math. Dept., Hong Kong Inst. of Education, Hong Kong, Peoples Rep of China. *On the Connectedness and Disklikeness of Self-affine Tiles*. Preliminary report.

There is very limited knowledge about the connectedness of self-affine tiles T in \mathbb{R}^n . In here we consider the case that T is generated by an $n \times n$ integral expanding matrix A with $\det A = q$ and a consecutive collinear digit set of the form $\mathcal{D} = \{0, v, \dots, (|q| - 1)v\} \in \mathbb{Z}^n$. In \mathbb{R}^2 , T is always connected; by using a criterion of Bandt and Wang, we show that T is disklike if and only if $2|p| \leq |q + 2|$ where $x^2 + px + q$ is the characteristic polynomial of A . For higher dimension the connectedness problem become more complicated, we settle this in \mathbb{R}^3 but the question remains open in general. (Received July 27, 2004)