Dynamics on self-affine sets

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Abstract

Self-affine sets are a natural class of fractals to which one can associate various interesting dynamical systems.

Aside from the iterated function system which generates the self-affine set itself, there is another iterated function system on projective real space which describes the way in which straight lines through the origin are mapped by the matrices associated with the self-affine set. A third natural and highly topical dynamical system associated with a self-affine set is the scenery flow, which describes the process of zooming in on typical points of the set. Studying the invariant measures of these dynamical systems allows one to recover lots of information about the original fractal.

We will introduce self-affine sets and these associated dynamical systems, and use them to gain some understanding of the dimension of fractals.

The talk will include some joint work with Kenneth Falconer and some joint work with Jon Fraser.