ON ATTRACTORS OF A TYPE OF ITERATED FUNCTION SYSTEMS WITH CONDENSATION

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A *hyperbolic Iterated Function System (IFS)* on a metric complete space is defined as a finite collection of pairwise distinct contractions on this space.

M. Barnsley (1988) has introduced the concept of Iterated Function System with condensation on any metric complete space X. A constant compact-valued function on X with some compact subset K as its value, is called a *condensation* with K as *condensation set*. A *hyperbolic Iterated Function System with condensation* consists of a hyperbolic IFS completed with a condensation.

It is known that a nonempty compact set is the attractor of a hyperbolic IFS (with or without condensation) iff it is the unique fixed point of the respective Barnsley-Hutchinson operator on the set of compact subsets of the space. J.E. Hutchinson (1980) has proved that any hyperbolic IFS on a complete metric space possesses a compact attractor. M. Barnsley (1988) has proved that any hyperbolic IFS with condensation also has a compact attractor.

We consider IFS's with condensation in the Euclidean space R^n. We have shown that any finite sum of convex compacta in R^n can be represented as the attractor of a hyperbolic IFS. This provides an opportunity to replace any hyperbolic IFS with condensation of a special type (a finite sum of convex compacta as condensation set) with a standard hyperbolic IFS, having the same attractor.

Applying the stochastic algorithm, we can use this result to construct some special plane compact sets (including fractals, such as *The Pythagoras Tree*) by computer simulations as attractors of IFS's with condensation.