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Erin P. J. Pearse* (erin@math.cornell.edu), 588 Malott Hall, Cornell University, Ithaca, NY 14850. *Self-similar systems and their complex dimensions.*

An iterated function system Φ consisting of contractive similarity mappings has a unique attractor $F \subseteq \mathbb{R}^d$ which is invariant under the action of the system, as was shown by Hutchinson. We show how the action of the function system naturally produces a tiling \mathcal{T} of the convex hull of the attractor F . These tiles form a collection of sets whose geometry is typically much simpler than that of F , yet retains key information about both F and Φ . In particular, the tiles encode all the scaling data of Φ . We give the construction, along with some examples and applications.

The tiling \mathcal{T} is the foundation for the higher-dimensional extension of the theory of *complex dimensions* which was developed by Lapidus and van Frankenhuysen for the case $d = 1$. If time permits, we will elaborate on this and give some connections to geometric measure theory/integral geometry. (Received August 26, 2006)