MARKOV CHAINS AND ANALYSIS ON FRACTALS

KA-SING LAU
THE CHINESE UNIVERSITY OF HONG KONG

Abstract. A self-similar set has an associated symbolic space (coding space) which has a tree structure. We consider different random walks on the tree and study the limit sets, i.e., the Martin boundaries. We try to identify the self-similar set with the Martin boundary. In this way, the harmonic structure and the discrete potential theory on Martin boundary (Doob) can be inherited to the self-similar sets. We attempt to use the setup to consider a basic unsettle question in the analysis of fractals: the existence of a Laplacian or Dirichlet form on a fractal set. The talk is expository, and the motivations will be explained.