

1058-05-298

**Andrew J Beveridge\*** (abeverid@macalester.edu), Department of Mathematics, Macalester College, 1600 Grand Avenue, Saint Paul, MN 55105, and **Laszlo Lovasz**. *Exit frequency matrices for finite Markov chains*.

We think of a Markov chain as a random walk on a (directed) graph. If we consider such a random walk in reverse, the result is a random walk on an associated Markov chain, called the *reverse chain*. We develop a framework that describes how this duality extends to *stopping rules*. A stopping rule is an intelligent procedure which “looks where it is going” to sample exactly from any desired distribution. Fixing a target distribution  $\tau$ , we consider a family of stopping rules, one from each possible starting node. We show that this family is dual to a family of rules on the reverse chain to an associated distribution  $\tau^*$ . The key to unlocking this duality is to partition the random walks into *exit frequencies*, which are the expected number of exits at each node. (Received February 17, 2010)