

Conductance and Canonical Paths for Directed Non-lazy Walks

Ravi Montenegro, University of Massachusetts Lowell

Abstract

We show two Conductance-like theorems for mixing time of finite non-reversible non-lazy Markov Chains, i.e. when the Markov kernel is neither self-adjoint nor positive definite. The first holds for walks with small holding probability, while the second theorem holds even for walks with no holding probability. These are used to derive two canonical path theorems for such non-reversible non-lazy walks. As an application we show that a known bound for mixing time of walks on undirected Cayley graphs applies to all finite directed Cayley graphs.