Resistance distances and simple random walks on graphs

Yujun Yang
School of Mathematics and Information Sciences, Yantai University
Shangdong 264005, China
Email: yangyj@yahoo.com

Abstract

A walk consists of an alternating sequence of vertices and edges such that two consecutive
elements are incident, which begins and ends with a vertex. A random walk on a graph is a
walk generated from a random process by selecting an edge incident with a vertex randomly.
The theory of random walks on graphs is very closely related to resistance distance of graphs.
The resistance distance between two vertices is equal to the resistance between two equivalent
points on an electrical network, constructed so as to correspond to the graph.

In this talk, I will introduce resistance distances and simple random walks on graphs, with
emphasis being placed on relations between resistance distances and various parameters of simple
random walks on graphs.