PROBABILITY SEMINAR SERIES

TOPIC: Activated Random Walks

SPEAKER: Alexandre Stauffer, University of Bath, UK.

TIME: 11:00am-12:00pm, Tuesday, March 15, 2016

VENUE: Room 264, Geography Building, Zhongbei Campus

ABSTRACT OF THE TALK

We consider the activated random walk model on general vertex-transitive graphs. A central question for this model is whether the critical density \( \mu_c \) for sustained activity is strictly between 0 and 1. It was known that \( \mu_c > 0 \) on \( \mathbb{Z}^d, d \geq 1 \), and that \( \mu_c < 1 \) on \( \mathbb{Z} \) for small enough sleeping rate. We show that \( \mu_c \to 0 \) as \( \lambda \to 0 \) in all transient graphs, implying that \( \mu_c < 1 \) for small enough sleeping rate. We also show that \( \mu_c < 1 \) for any sleeping rate in any graph in which simple random walk has positive speed. Furthermore, we prove that \( \mu_c > 0 \) in any amenable graph, and that \( \mu_c \in (0,1) \) for any sleeping rate on regular trees.

BIOGRAPHY

Alexandre Stauffer is a researcher at the University of Bath, UK. He got a Ph.D. from the University of California, Berkeley, and was a post-doc at Microsoft Research, Redmond, and Universita Roma Tre. His research is in the area of discrete probability, including interacting particle systems and Markov chain mixing time.