

# Scaling limits and super-Brownian motion

Gordon Slade

`slade@math.ubc.ca`

University of British Columbia

This lecture will discuss self-avoiding walks, lattice trees, and percolation. These elementary models are interesting both mathematically and for their applications in physics and chemistry. Physicists and chemists have had much to say about them, but, at the level of mathematical theorems, much of the most interesting behaviour is not understood. In high spatial dimensions, a technique known as the lace expansion has resolved many of the mathematical issues. Scaling limits of high-dimensional lattice trees and percolation turn out to involve super-Brownian motion, which is the scaling limit of branching random walk (as ordinary Brownian motion is the scaling limit of ordinary random walk).