

BROWNIAN INTERSECTION EXPONENT IN THREE DIMENSIONS

Gregory F. Lawler
University of Chicago

There has been an enormous amount of progress in the last ten years on two-dimensional critical systems. However, most of the techniques are not applicable to the equally interesting case of three dimensions. Since much of the two-dimensional work was spurred by considering the question of Brownian motion non-intersection probabilities, it seems natural to focus on this problem in three dimensions. (Since Brownian paths do not intersect in four or more dimensions, three dimensions is the key unknown dimension.)

I will discuss some of the known results about three-dimensional Brownian motion intersection exponents and a recent result in collaboration with Brigitta Vermesi about the exponential rate of convergence to the equilibrium measure for three-dimensional Brownian motions at a “typical” cut point. I will also list a number of open questions.