

CRITICAL BRANCHING BROWNIAN MOTION WITH ABSORPTION

Julien BERESTYCKI *Oxford University, UK*, E-mail: julien.berestycki@stats.ox.ac.uk

Abstract: Consider one-dimensional branching Brownian motion in which particles are absorbed at the origin. We assume that when a particle branches, the offspring distribution is supercritical, but the particles are given a critical drift towards the origin so that the process eventually goes extinct with probability one. We establish precise asymptotics for the probability that the process survives for a large time t , improving upon a result of Kesten (1978). We also prove a Yaglom-type limit theorem for the behavior of the process conditioned to survive for an unusually long time, which also improves upon results of Kesten (1978). An important tool in the proofs of these results is the convergence of branching Brownian motion with absorption to a continuous state branching process.

Based on joint works with N. Berestycki, J Schweinsberg and P. Maillard, J. Schweinsberg.