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Matt Roberts and **Jason Schweinsberg*** (jschwein@math.ucsd.edu). *A Gaussian particle distribution for branching Brownian motion with an inhomogeneous branching rate.* Preliminary report.

Motivated by the goal of understanding the evolution of populations undergoing selection, we consider branching Brownian motion in which particles independently move according to one-dimensional Brownian motion with drift, each particle dies at a constant rate, and the rate at which a particle splits into two is a linear function of the position of the particle. We show that, under certain assumptions, after a sufficiently long time, the empirical distribution of the positions of the particles is approximately Gaussian. This provides mathematically rigorous justification for results in the Biology literature indicating that the distribution of the fitnesses of individuals in a population over time evolves like a Gaussian traveling wave. (Received September 10, 2019)