

FLUCTUATIONS OF BROWNIAN MOTION WITH DRIFT

JOSEPH G. CONLON* AND PEDER OLSEN**

Abstract

Consider 3 dimensional Brownian motion started on the unit sphere $\{|x| = 1\}$ with initial density ρ . Let ρ_t be the first hitting density on the sphere $\{|x| = t + 1\}$, $t > 0$. Then the linear operators T_t defined by $T_t \rho = \rho_t$ form a semigroup with an infinitesimal generator which is approximately the square root of the Laplacian. This paper studies the analogous situation for Brownian motion with a drift $\mathbf{b}$, where $\mathbf{b}$ is small in a suitable scale invariant norm.

*Research partially supported by the U.S. National Science Foundation under grants DMS 9403399 and DMS 9404197.

**Research supported by NFR - Norges Forskingsråd (Norwegian Research Council) grant 100222/40.