

1146-60-235

Upul Hemakumara Rupassara* (upul@siu.edu), Department of Mathematics, Southern Illinois University Carbondale, 1245 Lincoln Drive, Mail Stop 4408, Carbondale, IL 62901.

Geometry of the Riemannian manifolds determined by the Brownian motion inside small geodesic balls. Preliminary report.

The first exit time and position of a Brownian particle inside small geodesic balls on Riemannian manifolds are considered and formulas are derived in terms of the curvature of the manifolds. Some geometric properties are derived considering different statistical relations. Especially a generalized formula is used to obtain an asymptotic expansion for the different moments of the exit time, and exit position of the Brownian particle inside small geodesic balls. Curvature expressions for the marginal distributions of the first exit time and position are obtained by considering some particular situations of the spherical harmonics and Laplace transform. (Received January 27, 2019)