
Homeomorphic Flows and Large Deviations for Stochastic Differential Equations Driven by a G -Brownian Motion

Fuqing GAO

School of Mathematics and Statistics
Wuhan University, China

Email: fqgao@whu.edu.cn

A Burkholder-Davis-Gundy inequality and an extension of Itô's formula for the G -stochastic integrals are presented. Some moment estimates and Hölder continuity of the G -stochastic integrals and the solutions of stochastic differential equations with Lipschitzian coefficients driven by G -Brownian motion are obtained. Homeomorphic property with respect to the initial values and large deviation principle for the stochastic differential equations are established.

.....

References

- [1] Denis, L., Hu, M. S., Peng, S., Function spaces and capacity related to a sublinear expectation: application to G -Brownian motion paths. Preprint(pdf-file available in arXiv: math.PR/0802.1240v1 9 Feb 2008).
- [2] Kunita, H., *Stochastic differential equations and stochastic flows of diffeomorphisms*, in: Lecture Notes in Mathematics 1097, Springer, Berlin, 1984, 143-303.
- [3] Ikeda, N., Watanabe, S., *Stochastic Differential Equations and Diffusion Processes*, North-Holland/Kodansha, Amsterdam (1989).
- [4] Peng, S., Multi-dimensional G -Brownian motion and related stochastic calculus under G -expectation. *Stochastic Processes and their Applications*, 118(12), (2008), 2223-2253.
- [5] Peng, S., G -Brownian motion and dynamic risk measure under volatility uncertainty. Preprint(pdf-file available in arXiv: math.PR/0711.2834v1 19 Nov 2007).
- [6] Freidlin, M. I., Wentzell, A. D., *Random Perturbations of Dynamical Systems*. 2nd ed. Springer, New York, 1998.