The Freidlin-Wentzell and Onsager-Machlup Dilemma

Tiejun Li

School of Mathematical Sciences, Peking University, China

Email: tieli@pku.edu.cn

The Onsager-Machlup (OM) functional is well-known for characterizing the most probable transition path of a diffusion process with non-vanishing noise. However, the Freidlin-Wentzell (FW) functional is also well accepted as the objective functional to be minimized in rare event studies. The relation between these two is subtle, although some pioneering work has been done in previous literature. We provide a new perspective on this issue. The related algorithmic studies are also discussed. Some interesting examples are illustrated to gain insights.