

ADAPTIVE ESTIMATION FOR SMALL DIFFUSION PROCESSES

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Asymptotic normality; diffusion process; discrete time observations; maximum likelihood type estimator:

We treat an estimation problem of both drift and diffusion coefficient parameters for a diffusion process with small dispersion parameter based on sampled data. Sørensen and Uchida (2003) studied the simultaneous estimation of drift and diffusion coefficient parameters for a small diffusion process from discrete observations and they showed the asymptotic normality of the estimator. Uchida and Yoshida (2012) considered the adaptive estimation of drift and diffusion coefficient parameters for a discretely observed ergodic diffusion process from the viewpoint of numerical analysis. In this talk, we propose adaptive maximum likelihood type estimators for small diffusion processes, and their asymptotic properties including the convergence of moments are shown.

References

- [1] Sørensen, M. and Uchida, M. (2003). *Small-diffusion asymptotics for discretely sampled stochastic differential equations*, Bernoulli, 9, 1051–1069.
- [2] Uchida, M. and Yoshida, N. (2012). *Adaptive estimation of an ergodic diffusion process based on sampled data*, Stochastic Processes and their Applications, 122, no. 8, 2885-2924.