

Recent advances in the simulation and inference for stochastic differential equation models

Omiros Papaspiliopoulos, o.papaspiliopoulos@warwick.ac.uk

Department of Statistics, University of Warwick, Coventry, CV4 7AL UK.

Keywords: Exact simulation, Monte Carlo maximum likelihood, filtering, EM algorithm

Abstract

In this talk I will review recent advances in the exact simulation of diffusion processes, introduced mainly in [1], [2] and [3]. I will present a general methodology which can be used to solve a variety of statistical problems related to diffusion processes and I will give special attention to an EM algorithm for the estimation of parameters and unobserved states.

References

- [1] Beskos, A., Papaspiliopoulos, O. and Roberts, G.O. (2006). *Exact Simulation of Diffusion Sample Paths with Applications*. Bernoulli, 12, 1077-1098.
- [2] Beskos, A., Papaspiliopoulos, O., Roberts, G.O. and Fearnhead, P. (2006). *Exact and computationally efficient likelihood-based inference for discretely observed diffusions*. J. R. Statist. Soc. B., 68, 1-25.
- [3] Fearnhead, P., Papaspiliopoulos, O. and Roberts, G.O. (2006). *Particle filters for partially observed diffusions*. Submitted.