

## **Inference for a class of partially observed point process models**

**James S. Martin · Ajay Jasra · Emma McCoy**

Received: 20 June 2011 / Revised: 23 May 2012 / Published online: 30 August 2012  
© The Institute of Statistical Mathematics, Tokyo 2012

**Abstract** This paper presents a simulation-based framework for sequential inference from partially and discretely observed point process models with static parameters. Taking on a Bayesian perspective for the static parameters, we build upon sequential Monte Carlo methods, investigating the problems of performing sequential filtering and smoothing in complex examples, where current methods often fail. We consider various approaches for approximating posterior distributions using SMC. Our approaches, with some theoretical discussion are illustrated on a doubly stochastic point process applied in the context of finance.

**Keywords** Point processes · Sequential Monte Carlo · Intensity estimation