Titre :
Markov-switching discrete-time Hawkes process

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Abstract :

Hawkes processes are used in many fields of application (earth sciences, biology, ecology) to describe the occurrence of punctual events with a self-exciting (or auto-inhibiting) character. More precisely, the Hawkes process is a point process whose past-conditional intensity depends on the dates of past events through a so-called kernel function.
We focus here on the case where the baseline intensity of the process varies over time according to a Markovian regime. We show that, in the case of an exponential kernel, the discretized version of this process corresponds to a discrete-time hidden Markov model, whose inference can be carried out using standard methods.
We will illustrate the interest of this modeling for analyzing bat cry recordings.