

**Favetto, Benjamin**

**On the asymptotic variance in the central limit theorem for particle filters.** (English)

Zbl 1273.60046

ESAIM, Probab. Stat. 16, 151-164 (2012).

The tightness of sequence of asymptotic variances is established that are considered as functions of random observations in the framework of a hidden Markov model. The theory is applied for particle filter algorithms that approximate a sequence of distributions by a sequence of empirical measures generated by a population of simulated particles. The behaviour of particle filters, as the number of particles increases, is asymptotically Gaussian, and the asymptotic variance in CLT depends on the the given set of observations. Examples and numerical simulations are provided.

Reviewer: [Tomáš Cipra \(Praha\)](#)

**MSC:**

- [60G35](#) Signal detection and filtering (aspects of stochastic processes)
- [60F05](#) Central limit and other weak theorems
- [62M20](#) Inference from stochastic processes and prediction
- [60J05](#) Discrete-time Markov processes on general state spaces

Cited in **3** Documents

**Keywords:**

[central limit theorem](#); [asymptotic variance](#); [particle filter](#); [hidden Markov model](#); [tightness](#); [sequential Monte-Carlo](#)

**Full Text:** [DOI](#)