

## **On multi-step MLE-processes for some stochastic models**

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### **Abstract**

We propose a new method of the construction of the asymptotically efficient estimator-processes which are asymptotically equivalent to the MLE and the same time much more easy to calculated. The observed process can be ergodic diffusion, dynamical system with small noise, high frequency observations of diffusion process with unknown volatility, Markov sequence or hidden telegraph signal. For each model of observations we suppose that there is a learning time interval of the length negligeable with respect to the whole time of observations. Using the observations on this learning interval we construct a preliminary estimator with “bad” rate of convergence and then this estimator is used in the construction of one-step and two-step MLE processes, which are asymptotically equivalent to the MLE.