

Contrast-based information criterion for ergodic diffusion processes from discrete observations

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Abstract In this paper, we consider the model selection problem for discretely observed ergodic multi-dimensional diffusion processes. In order to evaluate the statistical models, Akaike's information criterion (AIC) is a useful tool. Since AIC is constructed by the maximum log likelihood and the dimension of the parameter space, it may look easy to get AIC even for discretely observed diffusion processes. However, there is a serious problem that a transition density of a diffusion process does not generally have an explicit form. Instead of the exact log-likelihood, we use a contrast function based on a locally Gaussian approximation of the transition density and we propose the contrast-based information criterion.

Keywords Akaike's information criteria · Model selection · Malliavin calculus · Maximum contrast estimator · Large deviation inequality · Discrete time observation