



Parametric inference for discretely observed multidimensional diffusions with small diffusion coefficient

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We consider a multidimensional diffusion X with drift coefficient $b(\alpha, X(t))$ and diffusion coefficient $\epsilon \sigma(\beta, X(t))$. The diffusion is discretely observed at times $t_k = k\Delta$ for $k=1..n$ on a fixed interval $[0, T]$. We study minimum contrast estimators derived from the Gaussian process approximating X for small ϵ . We obtain consistent and asymptotically normal estimators of α for fixed Δ and $\epsilon \rightarrow 0$ and of (α, β) for $\Delta \rightarrow 0$ and $\epsilon \rightarrow 0$. We compare the estimators obtained with various methods and for various magnitudes of Δ and ϵ based on simulation studies. Finally, we investigate the interest of using such methods in an epidemiological framework.

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