

Statistical inference for affine stochastic delay differential equations from discrete time observations

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Abstract: Consider the affine stochastic delay differential equation

$$dX(t) = \int_{-r}^0 X(t+s)a_{\vartheta}(ds)dt + \sigma dW(t)$$

and assume $(X(t), t \geq 0)$ is a stationary solution of it. Based on discrete time observations of $X(\cdot)$ several estimation procedures for unknown ϑ are studied: maximum pseudo-likelihood estimators and prediction based estimation functions. Their efficiency is compared and asymptotic properties are derived in cases, where the delay measures are concentrated on a finite set. A simulation study elucidates the pseudo-likelihood method.

The talk is based on a common work with M. Sørensen, Copenhagen.