



# Nonparametric model reconstruction for stochastic differential equation from discretely observed time-series data

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A scheme is developed for estimating state-dependent drift and diffusion coefficients in a stochastic differential equation from time-series data. The scheme does not require to specify parametric forms for the drift and diffusion coefficients in advance. In order to perform the nonparametric estimation, a maximum likelihood method is combined with a concept based on a kernel density estimation. In order to deal with discrete observation or sparsity of the time-series data, a local linearization method is employed, which enables a fast estimation.

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