



Mathematics > Statistics Theory

# An estimator for the quadratic covariation of asynchronously observed Itô processes with noise: Asymptotic distribution theory

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The article is devoted to the nonparametric estimation of the quadratic covariation of non-synchronously observed Itô processes in an additive microstructure noise model. In a high-frequency setting, we aim at establishing an asymptotic distribution theory for a generalized multiscale estimator including a feasible central limit theorem with optimal convergence rate on convenient regularity assumptions. The inevitably remaining impact of asynchronous deterministic sampling schemes and noise corruption on the asymptotic distribution is precisely elucidated. A case study for various important examples, several generalizations of the model and an algorithm for the implementation warrant the utility of the estimation method in applications.

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