On regularity conditions in parameter estimation for ergodic diffusion processes

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Abstract The asymptotic properties of the maximum likelihood and Bayesian estimators of finite dimensional parameter of any statistical model depend strongly on the regularity conditions. It is well-known that if these conditions are fulfilled then the estimators are consistent, asymptotically normal and asymptotically efficient. These regularity conditions are of the following type: the model is sufficiently smooth w.r.t. the unknown parameter, the Fisher information is positive continuous function, the model is correct and identifiable, the unknown parameter is an interior point of the parameter set.

In this talk we present a review of the properties of these estimators in the situations when these regularity conditions are rejected one by one. Therefore the presented results allow us to understand better the role of each regularity condition. As the model of observations we consider one-dimensional ergodic diffusion process.