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[ADVANCED](#)[TOP](#) > [Available Issues](#) > [Table of Contents](#) > [Abstract](#)

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[\[PDF \(156K\)\]](#) [\[References\]](#)**On Regular and Singular Estimation for Ergodic Diffusion**Yury A. Kutoyants¹⁾*1) Laboratory of Statistics and Processes, University of Maine*

Abstract: The asymptotic properties of the maximum likelihood and bayesian estimators of finite dimensional parameters 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 a positive continuous function, the model is correct and identifiable and the unknown parameter is an interior point of the parameter set. In this work we present a review of the properties of these estimators in the situations when these regularity conditions are not fulfilled. The presented results allow us to better understand the role of regularity conditions. As the model of observations we consider the one-dimensional ergodic diffusion process.

Key words: Asymptotic properties, maximum likelihood estimators, misspecified, misspecified models, non identifiable model, regularity conditions, singular estimation problem

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