

A 'second Le Cam lemma' for the Ibragimov Khasminkii limit experiment

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Abstract

We discuss some key features of the Ibragimov Khasminkii limit experiment whose log-likelihoods are of type $h \rightarrow W_h - \frac{1}{2}|h|$, $h \in \mathbb{R}$, with W two-sided Brownian motion.

A first property of this limit experiment is that it remains invariant under reparametrization around arbitrary reference points $h \in \mathbb{R}$. A second property is that equivariant estimators –in the sense of estimators working equally well at all points $h \in \mathbb{R}$ – exist which are essentially different: both maximum likelihood estimator and squared loss Bayesian estimator are examples of equivariant estimators, and it is well known that their quadratic risks are different.

In the context of estimating a periodicity parameter in a non time homogeneous diffusion –where a deterministic discontinuous periodic signal is present in the drift coefficient, and where the shape of the signal is known up to scaling by the periodicity parameter– we present a 'second LeCam lemma' for the Ibragimov Khasminkii limit experiment.

The talk is based on joint work with Yury Kutoyants.