Kolloquium über Mathematische
Statistik und Stochastische Prozesse

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Asymptotic equivalence between density estimation and the Gaussian white noise model revisited

Abstract:

Asymptotic equivalence means that two statistical models have the same asymptotic properties with respect to all decision problems with bounded loss. In nonparametric statistics, asymptotic equivalence has been found useful as it allows in some situations to switch to simpler models. One of the most famous results is Nussbaum's theorem which states that nonparametric density estimation is asymptotically equivalent to a Gaussian shift model provided that the densities satisfy some smoothness assumptions and are bounded away from zero.

In this talk we review the literature and study to which extent one can relax the assumption that the densities must be uniformly bounded away from zero. We derive moreover the optimal rates of the Le Cam deficiencies. A part of the talk will be devoted to explaining the lower and upper bounds in more detail. As application, we mention Poisson intensity estimation with low count data.

This is joint work with Kolyan Ray.

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