PARAMETRIC COVARIATION FROM NOISY OBSERVATIONS: EFFICIENCY, EQUIVALENCE AND ESTIMATION

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Covariation estimation; High-frequency data; Lower bounds; Asymptotic equivalence; fractional Brownian motion:

In this talk the estimation of the quadratic covariation matrix from an observed d-dimensional Gaussian path under noise will be discussed and analysed on a large scale. To this end, strong asymptotic equivalence between the initial discrete model and a continuous counterpart is established in the sense of Le Cam. The main result is marked by sharp lower bounds for a general class of underlying Gaussian processes. It is proven that models with common lower bounds are clearly classifiable by a comparison between the covariance operators of the underlying Gaussian processes. This result is applied in order to derive explicit lower bounds for certain classes of models, including the fractional Brownian motion. Finally, regular sequences of spectral estimators are constructed that obey the derived efficiency statements.

References

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