ASYMPTOTICALLY EFFICIENT ESTIMATE OF THE FRACTAL INDEX OF GAUSSIAN PROCESSES

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A quasi-maximum likelihood estimator (QMLE) proposed by M. L. Stein for the fractal index of Gaussian processes are studied under the fixed domain asymptotics. The model is known to be approximated by the fractional Gaussian noise (FGN) model and QMLE is based on the Whittle likelihood for the FGN model. It is shown that QMLE has the smallest asymptotic variance among all the estimators. The asymptotic bias is determined by the minimum point of the Kullback-Leibler divergence from the true density to the FGN model. The performance of interpolation based on QMLE is numerically examined.