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Moldavskaya, Elina, Cybernetical Institute of National Academy of Science of Ukraine

Minimum Contrast Estimators of Parameter of Spectral Density of Random Fields in Continuous Case.

Let $\xi(x), x \in R^n$ be a random field with continuous parameter, mean zero and spectral density $f(\lambda;\theta) = \sigma^2(\theta)\psi(\lambda;\theta), \lambda \in R^n, \theta \in \Theta \subseteq R^m$ $\int\limits_{R^n} \frac{\psi(\lambda;\theta)}{1+\|\lambda\|^2} d\lambda = 1$, let $I_T(\lambda)$, $\lambda \in R^n$, $T = (T_{1,\dots,}T_n) \in R^n$ be a periodogramm of the observations. Consider Ibragimov's contrast function $K(\theta_0;\theta) = \int\limits_{R^n} \frac{f(\lambda;\theta)}{1+\|\lambda\|^2} \log\psi(\lambda;\theta)d\lambda$, $\theta_0, \theta \in \Theta$, where θ_0 is true value of parameter and corresponding contrast field

$$U_T(\theta) = \int\limits_{R^n} \frac{I(\lambda)}{1+\|\lambda\|^2} \log\psi(\lambda;\theta)d\lambda,$$

$\theta \in \Theta$, Define minimum contrast estimators $\hat{\theta}_T = \arg\min U_T(\theta)$ and let $\hat{\sigma}^2_T = \int\limits_{R^n} \frac{I(\lambda)}{1+\|\lambda\|^2} d\lambda$ Ibragimov's estimators are interpretated as minimum contrast estimators and conditions of consistency and asymptotic normality of $\hat{\theta}_T$ and $\hat{\sigma}^2_T$ as $\widetilde{T} \to \infty$, $\tilde{T} = \min\{T_i, i = 1, ..., n\}$ are given. This is joint result with prof. N. N. Leonenko.