Identification of Scale Parameter of the Matérn Model

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Abstract

The Matérn model plays an increasing role in the spatial statistic in recent years. For the Matérn model the corresponding isotropic spectral density is

$$f(u) = \frac{\sigma^2 \alpha^{2\nu}}{\pi^{d/2}(\alpha^2 + u^2)^{\nu + d/2}},$$

where d is the dimension, σ^2 is the variance, $\alpha > 0$ and $\nu > 0$ are scale and smoothness parameters, respectively. Previously it was proved that condition $d < 4$ guarantees the equivalence of the probability measures corresponding to different scale parameters. Similarly it was proved that the measures are orthogonal at the case $d > 4$. In the present talk we prove the orthogonality of the measures for the different scale parameters for $d = 4$ at the case of even ν.