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Abstracts of Short Communications and Posters

Section:

12. Probability and Statistics

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On some properties of correlation and spectral functions.

Let $\xi(x),\ x \in R^n$ be a real measurable square-mean continuous homogeneous isotropic random field with $E\xi(x) = 0,\ E\xi^2(x) = 1$, and the correlation function

$$B_n(r) = 2^{(n-2)/2}\Gamma\left(\frac{n}{2}\right)\int_0^\infty J_{\frac{n-2}{2}}(\lambda r)(\lambda r)^{(2-n)/2}d\Phi(\lambda)$$

where $J_\nu(z)$ is the ν-order Bessel function of the first kind, $\Phi(\lambda)$ is a spectral function. Let $f(\lambda)$ be a spectral density, which corresponds to $\Phi(\lambda)$.

1) Properties of positive definite spectral densities $f(\lambda)$ are obtained.
2) Adjoint positive definite spectral densities $f(\lambda)$ are studied.
3) Connections between spectral and correlation functions for different dimensions n are obtained.