

On Some Application of Multidimensional Probability Metrics

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In many cases mathematical models for spatial phenomenon or images are obtained as particular instances of random fields. Models of this type are often characterized reasonably well by their correlation or spectral functions. There are a lot of numerical methods for estimating the values of correlation or spectral functions. Since we usually have a finite number of observations, it is clear that these methods build estimates only for finite area. For this reason it is important to obtain estimates of the closeness in different metrics of the spectral and correlation functions of random fields. Multidimensional probability metrics are considered. Estimates of the closeness in such metrics of the spectral and correlation functions of real, measurable, mean-square continuous, homogeneous isotropic random fields [1] are given. Connections between distances in different metrics are established. Some applications and generalizations of previous results by the authors are shown.

REFERENCES

1. Yadrenko M.I. (1983). *Spectral Theory of Random Fields*. Optimization Software Inc., New York (distributed by Springer-Verlag).

RESUME

Estimates of the closeness in multidimensional probability metrics of the spectral and correlation functions of random fields are given. Some applications of these results are shown.