V. G. VOINOV, M. S. NIKULIN

Unbiased Estimators and their Applications Volume 2: Multivariate Case

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Chapter I summarizes basic definitions relevant to the multivariate distributions (both discrete and continuous ones) as pdf, cdf, marginal and conditional distributions, moments, characteristic function etc. Aside that, multivariate normal distribution as well as some other most typical (and useful) discrete and continuous multivariate distributions are characterized in details.

Chapter II describes shortly basic concepts and principles of the (point) statistical estimation as the risk, consistency, unbiasedness, sufficiency, completeness and unbiasedness. Multivariate versions of the Rao–Cramer inequality and the Rao–Blackwell–Kolmogorov theorems are given in details. Quite a lot of space is devoted to the normal distribution and to the Stein's "shrinkage approach" for the improvement of estimators.

Chapter III, which presents techniques for the construction of the unbiased estimators, forms the *first key part* of the book. The ideas are closely connected to the first volume of this monograph without which it is not always easy to follow the text in detail. The aim is concentrated on the unbiased estimation of the multivariate probability density functions and MVUE's for multivariate power series distributions.

Several interesting applications of unbiased estimators can be found in Chapter IV.

The *second key part* is formed by Appendix 1 containing more than 40 pages of tables of unbiased estimators for the most typical multivariate distributions. In Appendix 2 a technique for evaluating of some multiple integrals encountered in statistics is discussed. Finally, Appendix 3 is devoted to the problem of the construction of partitions.

Also of interest might be the first volume *Unbiased Estimators and their Applications. Vol. I: Univariate Case* written by the same authors, Kluwer Academic Press, Dordrecht, The Netherlands, ISBN 0-7923-2382-3.

Jaromir Antoch