

# Jordan algebra in estimation and testing hypotheses in multivariate normal models

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## Abstract

In this presentation estimation of fixed and covariance parameters will be considered in multivariate normal models with special covariance structure i.e. block compound symmetric (BCS). The properties of the estimators will be analyzed. Under multivariate normality, the free-coordinate approach is used to obtain unbiased linear and quadratic estimates for the model parameters. Optimality of these estimators follows from sufficiency and completeness of their distributions. As unbiased estimators with minimal variance, they are consistent.

Also in presentation will be given new approach for testing hypotheses on the structure of covariance matrices in double multivariate data with block compound symmetric covariance structure. It is proved that ratio of positive and negative parts of best quadratic unbiased estimators (BQUE) provide an F-test for independence of blocks variables in double multivariate models. Simulation studies for comparison of powers between F-test and LRT will be presented.

## Keywords

Best unbiased estimator, block compound symmetric covariance structure, double multivariate data, positive and negative part of estimator, structure of covariance matrices, structure of mean vector, testing hypotheses.

## References

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