

# Matrix approximation by block structures via entropy loss function

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## Abstract

The need to study the relationship between different groups of features leads to the analysis of multivariate data sets. This association is described by the covariance matrix, but in case when the number of observations is not large enough, the covariance matrix is singular or ill-conditioned. To overcome this problem we use structural restrictions to covariance matrix.

The aim of this talk is to present a procedure of approximation of symmetric positive definite matrix by symmetric block partitioned matrices with structured off-diagonal blocks. We study two structures of off-diagonal blocks: as a part of compound symmetry or first-order autoregression matrix. As an approximation criterion the entropy loss function is used. The approximation procedure and statistical problem of covariance structure identification is discussed in [1].

## Keywords

Matrix approximation, Block covariance structure, Entropy loss function.

## References

- [1] Janiszewska, M., Markiewicz, A. and Mokrzycka, M. (2020). Block matrix approximation via entropy loss function. *Applications of Mathematics* 65(6), 829–844.