

Accepted Manuscript

Approximation with a Kronecker product structure with one component as compound symmetry or autoregression

Katarzyna Filipiak, Daniel Klein

PII: S0024-3795(18)30420-8
DOI: <https://doi.org/10.1016/j.laa.2018.08.031>
Reference: LAA 14710

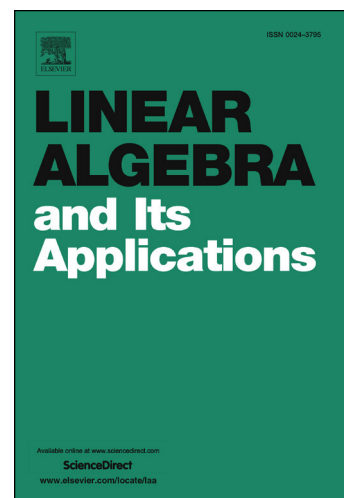
To appear in: *Linear Algebra and its Applications*

Received date: 1 November 2017

Accepted date: 26 August 2018

Please cite this article in press as: K. Filipiak, D. Klein, Approximation with a Kronecker product structure with one component as compound symmetry or autoregression, *Linear Algebra Appl.* (2018), <https://doi.org/10.1016/j.laa.2018.08.031>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



Approximation with a Kronecker product structure with one component as compound symmetry or autoregression

Katarzyna Filipiak^a, Daniel Klein^{b,*}

^a*Institute of Mathematics, Poznań University of Technology, Poland*

^b*Institute of Mathematics, Faculty of Science, P. J. Šafárik University, Košice, Slovakia*

Abstract

The aim of this paper is to determine the Kronecker product of two matrices, where the first component is structured as compound symmetry or autoregression of order one and the second one is arbitrary, such that the Frobenius norm of this matrix and a given, arbitrary matrix (unstructured or separable) is minimized. The properties of this nearest approximation, such as non-negativity, symmetry or positive definiteness are shown. The proposed method can be used for example in statistical research: for regularizing the covariance structure of a given covariance matrix, for determining the estimators of covariance structure or for testing hypotheses about the covariance structures. Simulation studies show that the proposed approach is reliable in the mentioned issues.

Keywords: Autoregression of order one, Compound symmetry, Estimation, Frobenius norm, Kronecker product, Regularization

2000 MSC: 62H20, 65F99, 15A60, 62H12.

*Corresponding author

Email addresses: katarzyna.filipiak@put.poznan.pl (Katarzyna Filipiak), daniel.klein@upjs.sk (Daniel Klein)

Download English Version:

<https://daneshyari.com/en/article/8966125>

Download Persian Version:

<https://daneshyari.com/article/8966125>

[Daneshyari.com](https://daneshyari.com)