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THE PROPERTIES OF PARTIAL TRACE AND BLOCK TRACE OPERATORS OF PARTITIONED MATRICES*

KATARZYNA FILIPIAK†, DANIEL KLEIN‡, AND ERIKA VOJTKOVÁ§

Abstract. The aim of this paper is to give the properties of two linear operators defined on non-square partitioned matrix: the partial trace operator and the block trace operator. The conditions for symmetry, nonnegativity, and positive-definiteness are given, as well as the relations between partial trace and block trace operators with standard trace, vectorizing and the Kronecker product operators.

Both partial trace as well as block trace operators can be widely used in statistics, for example in the estimation of unknown parameters under the multi-level multivariate models or in the theory of experiments for the determination of an optimal designs under the linear models.

Key words. Partial trace operator, Block trace operator, Block matrix.

AMS subject classifications. 15A15, 47B99.

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†Institute of Mathematics, Poznań University of Technology, Poland (katarzyna.filipiak@put.poznan.pl). Supported by Statutory Activities No. 04/43/DSPB/0088.

‡Institute of Mathematics, Faculty of Science, P. J. Šafárik University, Košice, Slovakia (daniel.klein@upjs.sk). Supported by grants VEGA MŠ SR 1/0344/14 and VEGA MŠ SR 1/0073/15.

§Institute of Mathematics, Faculty of Science, P. J. Šafárik University, Košice, Slovakia (erika.vojtkova@student.upjs.sk).