

Abstract of the bachelor thesis

Title: Matrix Algebra in Statistics

Author: František Navrátil

Department: Department of Probability and Mathematical Statistics

Supervisor: Doc. Mgr. Michal Kulich Ph.D.

Abstract: The thesis deals with the theory of matrix algebra, which is applicable in probability and statistics. The aim of the thesis is to summarize it in a clear and understandable way, so that the student familiar with the basics of matrix theory can expand his knowledge and use it in further studies. Therefore, the thesis contains many definitions and proved theorems, and examples to help understanding the theory. Applications are mentioned. It also provides references for further reading. The thesis begins with a brief summary of basic definitions and results in matrix algebra, which are covered in the usual courses on linear algebra. Subsequent chapters are specific, inter alia, for probability and statistics – in particular, they focus on special types of matrices and their properties, important matrix decompositions, functions of matrices and matrix differentiation.

Keywords: matrix algebra, statistics, idempotent matrix, spectral decomposition, Kronecker product