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1. Introduction

The aim of this contribution is to show an easy computer implementation of special cases of general linear model in MATLAB programme system. The general linear model with singular covariance matrix will be discussed and the best linear unbiased estimators of linear parameter function are derived in the first part of chapter 4. The derivation is based on Moore-Penrose pseudoinverse matrix A^+ and follows the approach of Albert in [1]. This approach is compared with approach utilized generalised inverse A^- which were studied e.g. by Rao, Kubařek and many others (see e.g. [3]). Because the matrix form of this estimates is rather peculiar the MATLAB system is very suitable for comparison of numerical procedures based on both approaches. The necessary properties of pseudoinverse matrices which are used in proofs of main theorems are remembered in chapter 3. Chapter 2 contains only notation. Final chapter is devoted to special cases of general linear model and includes linear approach to estimation of variance components in mixed linear model and main idea of submodels hypothesis testing. The goal is to show possibility of easy computer implementation of these models in MATLAB system.

* Notation

$\mathbb{R} = (-\infty, \infty)$... set of all real numbers

$\mathbb{M}_{m \times n}$... set of $m \times n$ matrices over the field of real numbers

$\mathbb{M}_n = \mathbb{M}_{n \times n}$

A' ... transpose of matrix $A \in \mathbb{M}_{m \times n}$

$x = (x_1, \dots, x_n)'$... column vector in \mathbb{R}^n