Acta Univ. Palacki. Olomuc., Fac. rer. nat., Mathematica **45** (2006) 57–66

Two Different However Equivalent Methods for Derivation of Estimators of Parameters in Deformation Measurements

LUCIE EXNEROVÁ

Department of Mathematical Analysis and Applications of Mathematics, Faculty of Science, Palacký University, Tomkova 40, 779 00 Olomouc, Czech Republic e-mail: exnerova.lucie@seznam.cz

(Received February 10, 2006)

Abstract

The aim of this paper is to develop two different methods for an executing of the deformation measurement and to prove that these two methods are equivalent which is a advantage for a conclusive verification of the results of the experiment in a practice.

Key words: Multiepoch linear model, multivariate regression model with constraints.

2000 Mathematics Subject Classification: 62J05, 62H15

1 Introduction

The aim is to develop two different methods for an executing of four epochs experiment in which the movements of the reference points on a dam during the gradual filling of the dam have been measured. According to the instructions of a structural designer these points should move along the specific trajectories. The aim of this experiment is to compare these theoretical trajectories with empirical ones. In the first method coordinates of the reference points and the parameters that describe trajectories of these points are estimated at the same time. In the second method the coordinates of the points are estimated first