SUMMARY OF DOCTOR THESIS

"THE EXISTENCE AND ASYMPTOTIC PROPERTIES OF SOLUTIONS OF DIFFERENCE EQUATIONS IN BANACH SPACES AND THE UNIVERSAL MODEL OF TIME SCALE AND ITS APPLICATIONS"

This doctoral thesis investigates certain properties of solutions to difference equations in Banach space and presents the idea of the model of time scale and its applications in economics. The first part presents the results of research into the existence of certain solutions to difference equations and the asymptotic behaviour of some of the types of these solutions. The second part of the paper discusses equations on time scale and the applications of these concepts in economics. Economics is a science based on research into economic phenomena which take place both in continuous time and in discrete time. It is very advantageous to give up the division into continuous and discrete time and to replace the old model by a unified model on time scale. One of these advantages is the possibility to use an already constructed model for calculations for any set T (Time Scale). This paper consists of five chapters. The first chapter is the introduction. In contains definitions and theorems referred to in the whole thesis, especially those relating to the theory of measures of non-compactness. The second chapter discusses the existence of difference equations of the first, second and third degrees. The purpose of the third chapter is the presentation of theorems concerning the oscillatory character of solutions to differential equations on time scale. The fourth chapter is devoted to the stability of solutions of differential equations with variable delays in Banach space. The fifth chapter presents the application of the differential and integral calculus on time scale in economics.