# ABSTRACT

The thesis is presented in 55 pages. It contains bibliography of 17 references, 15 figures, 9 tables and 2 appendixes are given in the thesis.

The goal of the thesis is modeling of the development of the social-migration, infrastructure, resources use processes ad their relationships, which influense dynamics of town boundaries growth.

The comparative analysis of mathematical methods of urban growth, such as mathematical, economical models and cellular automata, is fulfilled and discussed. System of differential equations is selected as implemented method, since it describes dynamic of processes in process of time and possesses wide field of possible modifications. Internal factors that positively influence the development of town boundaries, namely the demographic situation and the availability of resources, and the factors that can slow down the expansion of the territory - the emigration of population and infrastructure degradation are considered.

The mathematical model for the case of the population forecasting of dynamics of town boundaries growth and factors, which affects on it, is proposed and it can be modified for others the most valuable factors.

Keywords: town growth, development factors, urban growth, system of differential equations, growth speed coefficient, utility function, human and natural amenity.