

## ABSTRACT

The thesis is presented in 55 pages. It contains bibliography of 17 references, 16 figures, 3 tables and 2 appendixes are given in the thesis.

The goal of the thesis is development of mathematical and programming cases for numerical modeling of differential heat equation.

Some standard numerical methods which using for heat equation solution such as numerical schemes for solving heat equation are considered. During analysis the most valuable criteria is determined — accuracy of methods.

Galerkin method (finite elements method) and twist-and-steer scheme are used to solve the task.

The automated system implementing the chosen method is developed. The developed system is tested.

Keywords: heat equation, Galerkin method, twist-and-steer scheme, boundary value problem, numerical modeling, thermal diffusivity coefficient

