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STATEMENT OF PROBLEM FOR EMPLOYING THE THEORY OF BRANCHING PATHS TO SOLVE PROBLEMS OF SEARCH AND RESCUE IN EMERGENCY ZONE

The paper purpose is to formulate a scientific problem of the optimization of branching paths to solve the control problems for component drone vehicles designed to operational and rescue units in the emergency area.

The paper proposes a dynamic component system for continuous monitoring the territories in the emergency area by the use of an unmanned quadcopter. The problem of optimizing the path of the dynamic component system is to find the optimal controls and paths of motion of subsystems and it is being solved by methods of the theory of branching paths minimizing a given criterion.

Scientific novelty consists in finding the best times and phase coordinates, in which structural transformations of the dynamic component system take place, using the method of transformation of a dynamic component system in a dynamic discrete system with variable vectors of state and control during structural transformations. The practical significance is to create prerequisites for the development of multifunctional drone vehicles for real-time emergency monitoring.

Keywords: drone vehicles, branching paths, phase coordinates, emergency, optimization problem.

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