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H-index: 4

Monographs: 2

Scientific peer-reviewed papers: 40

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Tutorial:

Graph Theory and Combinatorial Optimization in the Applied Problems of the Freight Railway Transportations Management

The report will consider a number of optimization problems devoted to the freight railway transportations management.

The stage of the planning of the freight railway transportations involves the construction of the conflict--free sets of threads, as well as the same problem taking into account the current transportations plan. Within the framework of the proposed approach, these applied problems are reduced to the consideration of the classical combinatorial optimization problem on the largest independent set.

The next stage of the organization of the freight railway transportations consists in the assignment of locomotives, which are given by conditions of their ability, for execution of the transportations plan, which is given by the conflict--free set of threads. To reduce the dimension of this problem, it is proposed the approach in the framework of which the investigation reduces to solving the problem on the decomposition of the directed graph on the set of strongly connected components. In this case, each strongly connected component generates the same problem, and within these components the problem on the assignment of locomotives is reduced to solving the problem on the cover of vertices of the graph by minimal number of directed paths.