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An Optimization Method of the Multi-Group Train Formation at Flat Yards

Abstract. Formation of multi-group trains is aimed at arranging their cars in a given order and is one of the mass operations performed at railway. In this regard, the reduction of the duration of shunting operations for the formation of multi-group trains is an urgent task for railway transport. In this paper, for a discrete deterministic-controlled system that simulates the operation of the flat yard, a mathematical statement of the problem of choosing the optimal order of multi-group train formation is obtained. The set of possible states of the system under study and the transitions between them are presented in the form of directed graph, which made it possible to reduce the problem of choosing the order of train formation to the problem of searching the shortest paths on the graph. An algorithm of searching the optimal order of train formation is proposed.

Keywords: railways, shunting, optimization, multi-group trains

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