Traffic Smoothness for Railway Track Closures

Closure of railway sections causes losses of traffic, expressed as the number of canceled trains at the time of closure. Because trains run on more than one railway section, the removal of a train from a closed railway section results in its removal from other sections of the railroad. Therefore scheduled closures of railway sections can be coordinated so that they occur at the same time. For this purpose, it is necessary to designate, for each pair of railway sections on the network, traffic compounds. The essence of optimal distribution of closures is to minimize the expected total traffic losses—number of canceled trains. Planning of closures and their optimal distribution in such a network is a complex problem involving issues of traffic organization and traffic regulation. The developed coordination method uses traffic compounds and the resulting common losses in traffic for connections being closed [1].

According to the theory of traffic flow, traffic smoothness capacity of an element of a railway network depends on the number of trains in a given period of time in which traffic is moving at maximum smoothness. The optimal capacity (traffic smoothness capacity) of the railway junction (rail station) is the number of trains—referred to as the optimal traffic intensity in terms of traffic smoothness—for which the average traffic smoothness flow is the greatest [1][2].

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The essence of the optimal distribution of closures is to minimize the expected total traffic losses. The paper [1] presents the problem of planning and coordination of closures in dense and complex transportation networks. In light of the fundamental differences in the organization and regulation of railway and road traffic, a method of coordination and a coordination algorithm were developed for the railway network. The developed coordination method uses traffic compounds and the resulting common losses in traffic for connections being closed [1][2].

References


Keywords

Railway track closures;Traffic smoothness;Railway capacity;Assessment of track configuration

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