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EAST UKRAINIAN NATIONAL UNIVERSITY
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PJSC «UKRZALIZNYTSIA»
Regional branch «Donetsk railway»

MANAGEMENT UKRTRANSBEZPEKA
IN LUHANSKAYA REGION

GLOBALIZATION OF SCIENTIFIC AND EDUCATIONAL SPACE. INNOVATIONS OF TRANSPORT. PROBLEMS, EXPERIENCE, PROSPECTS

THESES
OF INTERNATIONAL SCIENTIFIC CONFERENCE
3-12 May 2017
Dresden (Germany) - Paris (France)

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Recommended for publication by the Academic Council of the Volodymyr Dahl East Ukrainian National University (protocol № 9 from March 31, 2017)

Globalization of scientific and educational space. Innovations of transport. Problems, experience, prospects: thesis, 3-12 May 2017, Dresden (Germany) - Paris (France) / Executive editor: Chernetska-Biletska N. – Severodonetsk: Volodymyr Dahl East Ukrainian National University, 2017.

CONTENTS

Pour parvenir de la haute productivité et la sécurité dans n'importe quelle affaire, chaque spécialiste doit se distinguer par une haute morale, et cette morale doit être renforcée par les connaissances variées, l'expérience, la culture, la foi. La volonté doit être la constante et amener à l'obstination dans le parvenir du but posé, et l'intérêt doit être haut et amener à l'activité.

IMPROVEMENT OF CONSTRUCTION AND ANALYSIS TRAIN SCHEDULE BASED MODELING PROPOGATION DELAYS ON THE RAIL NETWORK

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In terms of reform of Ukrain railway according to plan the implementation of EU Directives in the rail sector, approved by the Cabinet of Ministers of 26.11.2014 №1148-p [1], and accepted the direction of separation of infrastructure management and operation of railway infrastructure is presented to the owner topical issue of quality of transport services, one component of which is the reliability of the train arrival time at the final station of the route. Under such conditions, it is especially important the introduction of the automated system design and analysis of train schedule [2].

Under the current approach in analyzing the schedule of trains on the railways of Ukraine it is received to determine its quantity and quality, but insufficient attention is paid to accounting and the impact of delays in train stations and their spread across the ground rail. The experience of rail transport across the world, analysis of distributing schedule delay. It is important for evaluating the reliability of the train schedule and deficiencies in the development of hydraulic fracturing [3].

To solve the problem of analysis of trains' schedule in terms of propagation of trains' delays on the first stage of the work it is proposed to investigate the influence of the delay on the reliability of trains' schedule on the railway line and further impact for interfering railway lines.

For the study it isproposed to apply the optimization of mathematical model on the basis of bee colonies, which provides a efficient schedule on station for given input parameters and constraints and for minimizing the total downtime of trains at stations, the stopping time the train and the cost of fines for failure policy following trains through the station. Within the study

procedures delayed impact this mathematical model proposed to use as the basis of simulation, in which randomly generated value and delay recovery of the train and then performed construction management based fracturing failures and calculated statistical parameters of distribution delays. Found on a statistical approach parameters distribution delay laws to neighboring stations and stations on the reaction of absorption is input to the second phase of research dissemination delays at the landfill rail network.

The second stage involves propagation delays modeling on the railway ground similar to modeling spread of epidemics. The most acceptable is the use of mathematical models based on the SIR (Suspected-Infected-Recovered, eng.) [4]. This model is characterized by three types of facilities management, infected (I), in this case implied decimal delayed trains in motion; not infected (S), that mins trains follow without delay in movement; and objects that are immune and recovered (R), that trains were delayed on the stretch in the middle section, but through the use of reserve time in motion followed last scheduled polling station.

The results of modeling propagation delays enable network-level assess the impact of delayed trains, explore the dynamics of the number of detainees trains on the value of the delay and assess the effectiveness of various measures to avoid delays of trains and improve the procedure for constructing strings schedule of trains.

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