

ABSTRACTS of D.Sc. and Ph.D. THESES

*Selected abstracts of D.Sc. and Ph.D. theses
submitted at Russian transport universities
For the original Russian text please see p. 337.*

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Kiselev, M. D. Automatic control of speed of a cargo train using distributed traction. Abstract of Ph.D. (Eng) thesis [Avtomaticheskoe upravlenie skorostyu gruzovogo poezda pri ispolzovanii raspdelennoi tyagi. Avtoref. dis... kand. tekhn. nauk]. Moscow, RUT publ., 2019, 24 p.

New scientifically based technical solutions for improving the system for automatically controlling speed of a locomotive of a cargo train with distributed traction are introduced, making a significant contribution to development and improvement of efficiency and safety of railway transport.

A system of criteria for assessing quality of controlling speed of movement of heavy cargo trains using distributed traction is formed.

A system has been developed for automatic control of speed of movement of a cargo long-train with distributed traction. To ensure the required level of control quality and traffic safety, SAC is supplemented with a reference model of the train as of a control object.

A method was chosen for solving the problem of parametric synthesis of SAC of a cargo train with distributed traction, which should be performed using a multi-mass discrete train model.

A method has been developed for assessing sensitivity of SAC to deviation of system parameters.

Specialty 05.13.06 – Automation and control of technological processes and production (transport), 05.22.07 – Rolling stock of railways, traction of trains and electrification. The work was performed at Russian University of Transport.

Kornienko, E. V. Features of the stress-strain state of a continuous jointless track when taking into account the effects of trains. Abstract of Ph.D. (Eng) thesis [Osobennosti napryazhenno-deformirovannogo sostoyaniya besstykovogo puti pri uchete vozdeistviya

poezdov. Avtoref. dis... kand. tekhn. nauk]. Rostov-on-Don, PSTU publ., 2019, 23 p.

Based on solution of the problem of determining stability conditions of a continuous jointless track under the alternating action of longitudinal forces in rails at daily temperature fluctuations, taking into account the effects of trains, the mechanism and causes of growth of residual rail switches bending in the plan are revealed.

The studies allow to draw general conclusion that the smallest probability of occurrence of deviations dangerous for movement of trains in the stress-strain state of a continuous jointless track is ensured by the use of rails up to a haul with seasonal re-fastening of their 400-meter end sections.

Specialty 05.22.06 – Railway track, research and design of railways. The work was performed at Rostov State Transport University.

Vorobyev, V. G. Models and methods of operational recovery and ensuring availability of data from automated information systems. Abstract of D.Sc. (Eng) thesis [Modeli i metody operativnogo vosstanovleniya i obespecheniya dostupnosti dannykh avtomatizirovannykh informatsionnykh sistem. Avtoref. dis... dok. tekhn. nauk]. St. Petersburg, PSTU publ., 2019, 34 p.

The scientific problem of development of scientific and methodological apparatus for rapid recovery and availability of data based on vector representation of multi-bit binary numbers and numerical methods for their compression has been solved. The objective of the study was to provide required characteristics of efficiency of recovery processes and availability of information. The results include an increase in lossless compression coefficient for information of an arbitrary presentation format, thereby reducing possible costs of information storage means in automated information systems (AIS). Time for developing optimal plans for functioning of information accessibility systems (IAS) was reduced by 25 %.

Specialty 05.13.18 – Mathematical modelling, numerical methods and program complexes. The work was performed at Emperor Alexander I St. Petersburg State Transport University.