ABSTRACTS OF D.SC. AND PH.D. THESES

The selected abstracts of D.Sc. and Ph.D. theses submitted at Moscow State University of Railway Engineering

Emelyanova, G. A. Methodology of increasing the reliability of lifting equipment while providing the required risk criteria. Abstract of D.Sc. (Eng.) thesis. Moscow, 2017, 36 p.

The method for controlling the state of elements of metal structures with the use of magnetic structuroscopes has been improved, a general algorithm for the technical diagnosis of such structures has been developed, as well as a method for estimating the reliability of cranes, which takes into account loading parameters, mechanical properties of materials, purpose and the degree of responsibility of hazardous production facilities. The limiting control figures for the reliability of cranes are substantiated, a mathematical model and methodical approach to the estimation of seismic stability of bridge cranes are proposed, the coefficients of dynamism of impact from defective running wheels of a moving crane onto a rail are specified, the value of the damping coefficient of the rail track construction is established.

Fadeikin, T. N. Research of traction electric drives with asynchronous motors for rolling stock of railways with the purpose of increase of their energy efficiency. Abstract of Ph.D. (Eng.) thesis. Moscow, 2016, 24 p.

The generalized structure of the electric part of the traction electric drive for various types of rolling stock is presented, the technique of an estimation of power indicators of separate links of static converters of the electric power at nonsinusoidal currents and pressure is offered. A comparative analysis of power losses in the modules «autonomous voltage inverter – AC traction motor» for three types of inverters is performed.

Khryakov, K. S. Increase in stability of high-speed non-rail vehicles when passing small-radius curves. Abstract of Ph.D. (Eng.) thesis. Moscow, 2017, 24 p.

The degree of influence of vibrations of aerodynamic elements generating a clamping force on the stability of a high-speed vehicle in curves of small radius is established by the author of the thesis. At the same time, the target mathematical model was used, a method for ensuring the stability of trackless vehicles due to active control of the wing flaps was proposed.

Kunets, D. V. Provision of operational reliability of structures built into single-vaulted stations of St. Petersburg subway. Abstract of Ph.D. (Eng.) thesis. Moscow, 2017, 24 p.

Based on the analysis of the materials of technical diagnostics, the degree of influence of the detected defects on the level of the state of various structures and devices embedded in single-vane stations was determined, cause-effect relationships of the power interaction of the lining with structures were established, the dynamics and regularities of the deformation process of the system «soil mass – lining – in-built structure» during the service life of the station complexes.

Levin, S. B. Organization of the functioning of container companies in the transport system on the basis of modern logistics information technologies. Abstract of D.Sc. (Eng.) thesis. Moscow, 2016, 48 p.

The methodology and technical basics for the management of container and transport-logistics companies using technologies of 3PL and 4PL level are developed, and a management model constructed using graph theory and a cluster approach is proposed. In the model of optimization of the structure of the transport enterprise, the program-target methods and construction of the empirical median of the observed quantities are reflected depending on the amount of data processed and their linear approximation. A mathematical model of the organization of work of enterprises is developed, taking into account the reserves of the capacity of the infrastructure and the availability of services of logistic operators of the level 3PL and 4PL.

Mazhidov, F. A. Evaluation of the residual service life of a freight car taking into account its technical condition. Abstract of Ph.D. (Eng.) thesis. Moscow, 2017, 24 p.

A technique for estimating the residual service life of the elements of the car structure responsible for traffic safety is developed, the methodology for assessing the safety parameters, depending on the age of the component parts of the structure. With the help of the data from the network experiment, it was possible to propose a method for identifying the remaining life of the main components and components that affect safety, and, accordingly, the definition of the maintenance and repair procedure for the freight car.

Mekhedov, M. I. The technique of an estimation of the factors defining stability of handling of cargo train flows on cargo-loaded directions. Abstract of Ph.D. (Eng.) thesis. Moscow, 2017, 24 p.

Analysis of statistical and research data made it possible to determine the influence of various factors on the stable movement of freight trains, and to suggest a technique for identifying bottlenecks. The principles for assessing the technological effect of traction resource management options are developed by mathematical modeling of the dynamics of the development of the train situation on the cargo-loaded polygons of the railway network. ●