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SUMMARIES

SOME TASKS OF SYNTHESIS OF SPHERICAL FIVE-BAR HINGED RRRRT TYPE MECHANISM WITH TWO DEGREES OF FREEDOM. **N. Davitashvili, G. Chitashvili, N. Nozadze.** "Problems of Mechanics". Tbilisi, 2017, № 1 (66), pp. 5-14, (Engl.).

Are stated the solutions of task of synthesis of five-bar spherical hinged RRRRT type mechanism with two degrees of freedom . Are derived the conditions of existence of crank - one input link and possibilities of translational motion - second input link. Are defined the dimensions of links of mechanism with taking into account the angle of transmission. From the obtained expressions as a special case are obtained the formulae of synthesis of similar tasks of planar five-bar mechanism. 2 ill. Bibl. 15. Engl.; sum. in Russian.

CONSTRUCTIONS FOR ESTIMATION OF THE MILITARY VEHICLES PASSABILITY. **T. Natriashvili, P. Dolidze, R. Kenkishvili, R. Demetrashvili.** "Problems of Mechanics". Tbilisi, 2017, № 1 (66), pp. 15-23, (Engl.).

In article it is presented design schemes and their data of such construction designs which are using for assessment of the following parameters of the military vehicles passability: ground clearance; angles of approach and departure; ramp angle; minimum turning radius; corridor width at turning of minimal radius; maximal angles of overcome gradients and side slopes; maximal width of overcome vertical-sided ditch; maximal heights of overcome vertical wall and step; drawbar pull, speed and acceleration during mobility on the soft soil; maximal overcome water depth during fording. These parameters are accepted as obligatory within the North Atlantic Treaty Organization (NATO).

Design data are selected from proving grounds of military vehicles and the relevant documents of the USA and the Russian Federation so that they don't come in a contradiction with publications of the NATO.

Mentioned schemes can be used for building of proving ground passability constructions and for checking by means of comparative estimation those passability parameters of military vehicles, which are obligatory in the frame of the NATO. 13 ill. Bibl. 11. Engl.; sum. in Russian.

HIBRID TYPE MINI MOBILE MACHINE. **R. Kenkishvili, P. Dolidze, G. Chagelishvili, S. Sabashvili.** "Problems of Mechanics". Tbilisi, 2017, № 1(66), pp. 25-31, (Engl.).

In article it is presented a mini mobile machine of hybrid type elaborated in the Raphael Dvali Institute of Machine Mechanics. Mini mobile machine is an intermediate ring between two-wheel tractor and mini tractor. In the machine is used electric system of control, which provides: smoothly starting and stopping of machine, its maneuverability with independent

changing rotation frequency and rotation direction of wheels, machine movement in forward and backward direction and braking. Controlling of machine is accomplished by operator with electrical panel as distantly so sitting on the machine which makes a comfortable condition for him. Allocation of the operator directly on the machine increases adhesion of wheels, in result the machine can realize the heavy agricultural works.

Represented construction of mini mobile machine by simple alteration allows it to work with one or two axles, change the location of aggregates and units existed in the machine, to equip it by different hanging equipment. In such way there is possible to assemble the mobile machine with cross-country capability of different kind and purpose. 8 ill. Bibl. 10. Engl.; sum. in Russian.

TO ISSUE OF OPTIMIZATION OF DYNAMIC LOADS IN MULTIMASS MECHANICAL DRIVE SYSTEM. **T. Mchedlishvili, Z. Surmava, V. Iobadze, T. Kapanadze, G. Baghdavadze.** "Problems of Mechanics". Tbilisi, 2017, № 1(66), pp. 33-38, (Engl.).

In carried out previous studies were considered the issues related to the dynamic modeling and analysis of structurally complex mechanical drive systems with elastic inter-mass connections with application of the developed apparatus of modified characteristics of imaginary frequencies. In the presented work are revealed the main mathematical relations for the optimization synthesis of systems under study in the space of the internal parameters of system. Bibl. 11. Engl.; sum. in Russian.

STUDYING THE INFLUENCE OF FACTORS OF INSTABILITY OF FACE-MILLING PROCESS ON MECHANICAL HARDENING OF THE SURFACE LAYER. **M. Iremadze, A. Khvadagiani, G. Tutberidze.** "Problems of Mechanics". Tbilisi, 2017, №1(66), pp. 39-45, (Engl.).

The paper dwells on the possibility of obtaining the mathematical models of cutting tool wear during milling of structural steels. The models have been built for finish and roughing machining of steels 40X and 40XM, as well as the generalized models of tool wear during milling of steels 45, 40X, 40XM. Bibl. 7. Engl.; sum. in Russian.

THE ELASTIC-RADIAL DEFORMATION OF A TUBING STOCK DURING THE CUTTING OPERATION WITH A CONTOUR TOOL. **N. Sakhanberidze.** "Problems of Mechanics". Tbilisi, 2017, № 1(66), pp. 47-53, (Engl.)

In this paper, in order to introduce correction in a diametric size of a contour tool during processing of a tubing stock, the appropriate boundary elasticity problem has been stated and solved. There have been obtained the formulas for calculating the elastic-radial displacement of the processed stock of cutting edge of an annular cutting tool. 3 ill. Bibl.2. Engl.: sum. in Russian.

SYSTEMS FOR CONTROL OF RAIL TRACKS STATE. **N. Mukhigulashvili, A. Sharvashidze, M. Papaskiri, M. Chaladze.** “Problems of Mechanics”. Tbilisi, 2017, № 1(66), pp. 55-60, (Engl.).

Based on the analysis of 5 year statistics data on failures of automation and telemechanics devices on Georgia Railway is plotted the diagram and are determined the qualitative indicators of reliability of device. With analysis of reliability of insulating joint track circuits are stated the description of various modes of its operation and critical values of primary parameters of track circuit for corresponding modes. Are considered the audio frequency track circuits, principles of their construction, their advantages and shortcomings. Is stated the structural layout of axles count system for simple span and as final table is stated the comparison of traditional track circuits and axles count systems. Based on the comparison are made according conclusions. 3 ill. Bibl. 7. Engl.; sum. in Russian.

DEVELOPMENT PROBLEMS OF VEHICLES AND DIRECTIONS FOR SOLVING THEM UNDER CONDITIONS OF REGIONAL TOURISM. **N. Rusadze, T. Morchadze.** “Problems of Mechanics”. Tbilisi, 2017, № 1(66), pp. 61-64, (Engl.).

The quantity of transported passengers and cargo is influenced by both internal and external factors of the trucking company. To define the relationship between them, we have used the method of correlation-regression analysis, on the basis of which we demonstrate the forms and quantitative characteristic of relationship, by using the multi-factor regression model and through the density quality indicators.

The model of the quantity of transported cargo allows us for concluding that cargo turnover of motor transport has the greatest influence, the increase of which will lead to the increase in the quantity of cargo. Bibl. 6. Engl. sum. in Russian.

THE DECOMPOSITION OF WATER AT A LOW TEMPERATURE FROM THE POSITION OF THE SECOND LAW OF THERMODYNAMICS. **G. Aptsiauri.** “Problems of Mechanics”. Tbilisi, 2017, № 1 (66), pp. 65-69, (Engl.).

In the article are analyzed the issues of energy balance of the water disintegration process in the low temperature conditions in order to reveal the relation between the opposite processes of decomposition and synthesis with temperature. It is shown that is not existing strict relation between these processes and temperature that gives the possibility to judge the second law from the standpoint of criticism. Bibl. 10. Engl.; sum. in Russian.