

## №2(59), 2015

### SUMMARIES

SYNTHESIS OF HINGED FIVE-BAR MECHANISM WITH TWO DEGREES OF FREEDOM DESTINED FOR FOOD INDUSTRY. **N. Davitashvili**. "Problems of Mechanics". Tbilisi, 2015, № 2(59), pp. 5-12, (Engl.).

Is stated the synthesis of hinged five-bar mechanism with two degrees of freedom. Is carried out the analysis of path equation described by connecting point of five-bar mechanism rockers and by application of point interpolation method are determined the dimensions of links of mechanism described by lemniscates and applied in the food industry for design confectionery. 3 ill. Bibl. 9. Engl.; sum. in Russian.

NEW PROPERTY OF A CLOSED-CHAIN CONE SYSTEM WITH V-FOLDING RODS. **Sh. Tserodze, V. Gogilashvili, M. Nikoladze, N. Tsignadze, T. Chalauri**. "Problems of Mechanics". Tbilisi, 2015, № 2(59), pp. 13-19, (Engl.).

In the article is presented a new closed-chain deployable system that at full transformation reaches the conical shape. Individual parts of the system perform the simultaneous motion in the radial direction. A specific feature of the presented in the paper structure is that, as compared with analogous structures, for connecting the sections with one another there is not required application of additional synchronization devices in both belts. The kinematic analysis of the system is carried out for the regulated structural component that would be regarded as a model of the whole system's kinematics. This mechanism is a differential lever mechanism, the driving elements of which give the possibility to obtain the desired law of motion of a characteristic link. Therefore, is possible to construct the function of the lever mechanism position as well as kinematic functions of transmission. 9 ill. Bibl. 5. Engl.; sum. in Russ.

SOIL CRUSHING THEORY BY IMPACT WORKING BODIES. **R. Makharoblidze, Z. Makharoblidze**. "Problems of Mechanics". Tbilisi, 2015, № 2 (59), pp. 20-25, (Engl.).

With consideration of rheological properties of agricultural materials, as well as application of the methods of the theory of impact and laws of solids grinding is proposed crushing soil theory by impact working bodies. The reduction range of soil is associated with the design, kinematic and dynamic parameters of the working body, as well as physical and mechanical properties of soils. The results of study would be used at development of technological processes in agriculture and in the calculation of rotary working bodies machines. Bibl. 7. Engl.; sum. in Russian.

ANALYSIS OF DUAL CHANNEL PIEZOELECTRIC ACCELEROMETER. **T.I. Karimli**. "Problems of Mechanics". Tbilisi, 2015, № 2(59), pp. 26-30, (Engl.).

The article deals with an overview of the accelerometers which are used to measure the vibration of aircraft engines and linear acceleration in the inertial navigation, deficiencies of vibration sensors are revealed, presented a dual channel piezoelectric accelerometer with improved performance that allows the simultaneous measurement of vibration and g-load is presented and the modernization of modern aircraft engine vibration sensors including GEnx is under consideration. 5 ill. Bibl. 9. Engl.; sum. in Russian.

ANALYSIS OF NEW DESIGN OF A TRANSFORMABLE MECHANICAL CONICAL SYSTEM WITH V-FOLDING RODS. **Sh. Tserodze, M. Nikoladze, K. Chkhikvadze, T. Chalauri**. "Problems of Mechanics". Tbilisi, 2015, № 2(59), pp. 31-36, (Engl.).

In the article is presented a new closed-chain deployable system. For the preliminary investigation of the structure and making possible changes in it is constructed a mathematical model by ANSYS software

using the Ansys Parametric Design Language. The degrees of freedom of hinges are simulated in local coordinate systems and are as much as possible approximated to the real model. Calculations are carried out for various kinds of loads and appropriate results are obtained. 7 ill. Bibl. 5. Engl.; sum. in Russ.

THE IMPACT OF BLANK AND CUTTING TOOL PROPERTIES INSTABILITY ON CHARACTER AND INTENSITY OF WEAR. **M. Iremadze, A. Khvadagiani.** “Problems of Mechanics”. Tbilisi, 2015, № 2(59), pp. 37-43, (Engl.).

In the presented article is made attempt to separate the effect of the properties of blank and cutting tool on wear behavior and character of cutting tool wear at milling. Herewith, at each testing, there were observed a specific hardness of blank and specific hardness of cutter plate made from a hard alloy. 4 ill. Bibl. 7. Engl.; sum. in Russian.

SOLUTION OF TURBULENCE PROBLEM BASED ON TENSOR ANALYSIS. **A. Aptsiauri.** “Problems of Mechanics”. Tbilisi, 2015, № 2(59), pp. 44-52, (Engl.).

In the paper, with application of fundamental laws of tensor analysis, without introducing of any assumptions, is stated the definition of turbulent stress tensor and is shown that, if the surface that restricts the flow, does not generate transients, forced oscillations, and inside the flow have a stationary turbulent flow, then the behavior of the change of average velocity and density in space uniquely determines the turbulent stress tensor at any point within the flow. Bibl. 3. Engl.; sum. in Russian.

ELASTIC-PLASTIC PROBLEM OF TRANSVERSE EXTENSION OF MATRIX WITH SOFT ELASTIC-PLASTIC INCLUSION. **A. Buksianidze.** “Problems of Mechanics”. Tbilisi, 2015, № 2(59), pp. 53-57, (Engl.).

The major elastic-plastic task for plane with one rectangular constant thickness inclusion and finite width is considered. The material of matrix as well as inclusion is considered as elastic-plastic. 1 il., Bibl. 5. Engl.; sum. in Russian.

MODERN TECHNOLOGIES FOR TRANSITION ON INTELLECTUAL RAILWAY TRANSPORT. **I. Bitsadze, A. Sharvashidze.** “Problems of Mechanics”. Tbilisi, 2015, № 2(59), pp. 58-61, (Engl.).

In the article is considered the process of design, implementation and further improvement of intellectual systems on railway transport. The possibilities of applied in Russia and European leading countries intelligent systems are presented. The carried out study confirms that on given stage the implementation of mentioned systems in rail transport is inevitably and especial importance it has for Georgia Railway as for connecting Europe-Asia transport corridor. After the full rehabilitation of main railway and after commissioning of Kars-Akhalkalaki trunk railway, when significantly will increase international rail traffic, implementation of modern intelligent systems will be necessary to ensure non-stop operation of railway. Bibl. 7. Engl.; sum. in Russian.