№ 4(73), 2018
SUMMARIES

ANALYSIS OF DEVELOPMENT OF THE FRICTION SCIENCE. **N. Davitashvili. "**Problems of Mechanics". Tbilisi, 2018, № 4(73), pp. 5-48, (Engl.).

Are stated: the analysis of development of science on friction in XVI-XVII centuries as well as in the beginning of XIX century; researches of XX century and tasks of mechanics with consideration of friction; analysis of XX century on molecular theory of friction and on physical processes that accompanies dry friction; influence of various factors on values of friction force and review of works on research of problems of friction in hinged-lever mechanisms. 4 ill. Bibl. 18. Engl.; sum. in Russian.

NEW FOLDABLE MECHANICAL SUPPORTING RING STRUCTURE FOR SPACE ANTENNAS. **Sh. Tserodze, E. Medzmariashvili, N. Tsignadze, A. Chapodze, M. Muchaidze.** „Problems of Mechanics". Tbilisi, 2018 № 4(73), pp. 49-54, (Eng.)

Due theoretical, design and experimental studies related with the development of large deployable antenna reflectors have already been carried out for quite a long time, this area still remains of lively interest and has good application prospects. In the paper we describe the invention of new design of deployable ring structure for symmetric and asymmetric (with circular and elliptical apertures) radio telescopes. The novelty consists in that new engineering and technological effects we obtained by synthesis of two conical pantograph systems and whole rod structure consists cylindrical and sliding hinges only. 5 ill. Bibl. 11. Engl.; sum. in Russian.

ANALYSIS OF NEW FOLDABLE MECHANICAL SUPPORTING RING FOR SPACE ANTENNAS. **Sh. Tserodze, E. Medzmariashvili, K. Chkhikvadze, N. Tsignadze, M. Muchaidze.** „Problems of Mechanics". Tbilisi, 2018 № 4(73), pp. 55-62, (Eng.)

In the paper we analyze new design of deployable ring structure for symmetric and asymmetric (with circular and elliptical apertures) radio telescopes. The novelty consists in that new engineering and technological effects we obtained by synthesis of two conical pantograph systems and whole rod structure consists cylindrical and sliding hinges only. According to the selected and existing conceptual designs and acquired analysis results several variants of ring structures mathematical models have been constructed and compared by means of the NASTRAN software. The degrees of freedom of the hinges are simulated in local coordinate systems and are as much as possible approximated to the real model. Parametric FEM analysis tools of the concepts have been developed to study their static, modal and buckling behaviors. 6 ill. Bibl. 7. Engl.; sum. in Russian.

IMPACT OF MATCHING OF TANDEMWHEELED SELF-PROPELLED CHASSIS ON NORMAL REACTIONS OF WHEELS. **R. Makharoblidze, Z. Makharoblidze. "**Problems of Mechanics". Tbilisi, 2018, № 4(73), pp. 63-69, (Engl.).

Is developed the methodology for determination of normal reactions on the adaptive self-propelled chassis. Adaptability during the growth period of the plant, or the ability to adapt (concession) the energy mean at its heights and dimensions, will be achieved by arrangement on the chassis of balanced suspension of the tandem wheels. The developed methodology provide the specificity of such suspension. It is revealed that the total normal reaction on the bogie is non-uniformly distributed between the front and rear drive wheels.

This inequality can be avoided by means of a rational arrangement on girders of working members. The methodology for calculation of equipment parameters and technological evaluation has also been developed, as well as the effect of this arrangement on the uniformity and values of drive wheels pressure on the soil. 1 ill. Bibl. 4. Engl.; sum. in Russian.

DYNAMIC MODEL OF SECURITY MODULE OF THE TURBOJET OF THE AIRCRAFT ENGINES. **A. Maisuradze, S. Mebonia, M. Chelidze, G. Tabatadze.** „Problems of Mechanics“. Tbilisi, 2018, №4(73), pp. 71-77,(Engl.).

In article he shock interaction of the protective module of the turbojet engine of an aircraft with a bird is considered. Mathematical model for the study of dynamic phenomena in the collision of the protective module with a bird is developed. An experiment carried out using this model showed that the elastic elements in the design of the model perform a damping function and partially reduce the force of impact. 8 ill. Bibl. 8. Engl.; sum. in Russian.

CALCULATION OF TORSIONAL AND LONGITUDINAL VIBRATIONS OF AN ELASTIC-FRICTIONAL DAMPER **M. Tevzadze, Z. Chkhartishvili.** "Problems of Mechanics". Tbilisi, 2018, № 4(73), pp. 79-86, (Engl.).

With a view to increasing the reliability of the transmission of vehicle, the paper dwells on the method for calculating torsional and longitudinal vibrations of an elastic-frictional damper, which allows for choosing the optimal design parameters of damper, based on the analysis of the relationship between the section “clutch-gearbox primary shaft”, the amplitude of torsional vibrations and friction torque of damper. 5 ill. Bibl.3. Engl.: sum. In Russian.

THE CALCULATION OF THE STRUCTURAL STRENGTH OF THE CFRP WING SKIN OF AIRPLANE. **G. Okropiridze. “**Problems of Mechanics”. Tbilisi, 2018, № 4(73), pp. 87-92, (Engl.).

Are obtained in the conditions of physical and geometric non-linearity for multilayer thin-walled shells and plates the task solving regularity infringing factors. This solving, together with simplifying the algorithms are taking into account the mode of deformation condition particularity in the tense concentration zones. Are offered simplified variants of calculation of the cuttings and holes of thin-walled sandwich plates. Are solved tasks for calculation practice of the cuttings and holes thin-walled sandwich plates in the conditions of several variants of inserting the edges and different loads. Calculation methods of the sandwich shells and plates by considering the geometric and physical nonlinearity, let us to estimate variety of all the components of mode of deformation condition, values of critical load and the form of buckling in the load process, in addition, this method is more efficient in comparison with other numerical and numerical-analyzing methods. Bibl. 6. Engl.; sum. in Russian.