SUMMARIES

A CONTRIBUTION TO The MECHANICS OF A MULTI-LAYERED COMPLIANT SYSTEM WITH APPLICATIONS FOR SOFT ROBOTICS. **S. Gast, N. Prem, F. Schale, I. Zeidis, K. Zimmermann. "**Problems of Mechanics". Tbilisi, 2021, № 2(83), pp. 7-17, (Engl.)

A two-layer compliant structure is considered. One of its layers consists of a magneto-sensitive elastomer, while the other layer is made of a pure elastomer. Young and shear modulus in the magneto-sensitive layer depend on the magnitude of the applied magnetic field which change periodically in time. The theoretical investigations are dedicated to modeling the problem as a two-layer Timoshenko beam. By the method of averaging the expressions for the amplitude and phase of the steady-state vibrations of the beam are obtained. The results of the analytical investigations are confirmed by numerical calculations. The mechanical system under consideration can be regarded as a model of a tactile sensor or a gripping element in soft robotics. 4 ill. Bibl. 21. Engl., sum. in Russian.

THE STRUCTURAL ANALYSIS FOR THE CONNECTING ROD OF PISTON MACHINE USING ANSYS SOFTWARE. **Ismayil A. Ismayil. "**Problems of Mechanics". Tbilisi, 2021, № 2(83), pp. 19-24, (Engl.).

The stress and deformations are analyzed for the connecting rod made of steel material or special cast iron by applying pressure on it in structural analysis in this article. Structural analysis was performed in ANSYS software. An analysis of static stress and damages due to the application of pressure is presented and analyzed in this work. By observing the analysis results, we can decide whether our designed connecting rod is safe or not under applied load conditions. Investigation of complex problems with respect to friction and wear (clearances), stresses and strains phenomena in connecting rod of piston machines gives the opportunity to solve the problems of increasing the durability of these machines. 3 ill. Bibl. 11. Engl.; Sum. in Russian.

PIECEWISE HOMOGENEOUS ELASTIC BODY IN A SCALAR FIELD. **G. Sadunishvili. "**Problems of Mechanics". Tbilisi, 2021, № 2(83), pp. 25-32, (Engl.).

In this work, we consider the problem of interaction of elastic body with scalar field. The contact problem is solved by using a special boundary-contact condition, in the case where contact surface is a sphere. The uniqueness theorem for the solution is also proved. Solutions are obtained in the form of absolutely and uniformly convergent serie. Bibl. 3. Engl.; sum. In Russian.

PROTECTIVE CAPASITY OF THE GRID SYSTEM OF THE TURBOJET ENGINE. **M. Chelidze, A. Maisuradze, S. Mebonia.** "Problems of Mechanics", Tbilisi, 2021, № 2(83), pp. 33-40, (Engl.).

Various forms of the protective grid system are considered, as well as the deformation process and its duration. The analysis of the effectiveness of the protective grid system consisting of flat rods with sharp cutting edges, a system of protective grids made of round or prismatic strips, and a protective grid system made of rods with inclined surfaces is carried out. 6 ill. Bibl. 9. Engl.; sum. in Russian.

JUSTIFICATION OF KINEMATIC PARAMETERS OF THE SHREDDER OF THE ROOT SYSTEM OF BUSHES. Z. Makharoblidze, R. Phartskhaladze, V. Margvelashvili, S. Sharashenidze. „Problems of Mechanics“. Tbilisi, 2021, № 2(83), pp. 41-45, (Engl.).

Tea plantations in Georgia running out of circulation, their main part is covered with weeds and is carrying out the process of forestation. Due the decision of the Government of Georgia, gradual rehabilitation of plantations has been carried out since 2017. But there are such tea plantations areas where rehabilitation does not give the desired results. In such plantations, land recultivation works should be done, in particular plant cover will be removed from plots and soils will be prepared for tea or cultivation of other alternative cultures. 3 ill. Bibl. 5. Engl.:sum. InRussian.

IMPROVING OF BUILDINGS STABILITY BASED ON THE INCREASE OF THEIR SEISMIC RESISTANCE. **L. Samkharadze, G. Kipiani. "**Problems of Mechanics". Tbilisi, 2021, № 2(83), pp. 47-54, (Engl.).

The main typical groups of existing buildings are considered, according to their types of wall materials and load-bearing structural systems. General approaches to the issue of modernization of individual groups of buildings are stated. For the increased seismicity conditions of the area, one of the main approaches to improve the seismic resistance of the existing buildings is proposed the reconstruction-reinforccement of the load-bearing structural system of the building by installing metal frames with seismic insulators inside the building.In the restoration of damaged buildings, crucial is such interconnection of new and old load-bearing systems that ensures their reliably joint behavior for arbitrary direction of new calculated seismic loads. The creation of such joint spatial systems from new and old load-bearing structural systems must, in each case, be preceded by a comparative analysis of the various variants processed using appropriately accurate spatial and nonlinear calculation methods. 3 ill. Bibl. 16. Engl.; sum. in Russian.

AUTONOMOUS VEHICLE SPEED MONITORING AND CONTROL SYSTEM. **O. Gelashvili, V. Jajanidze, V. Abuladze.** "Problems of Mechanics". Tbilisi, 2021, № 2(83), pp. 55-59, (Engl.).

In the paper is considered the most important factors in ensuring traffic safety – the model of an autonomous system of speed monitoring and control. Here is given the importance of traffic telematics in the process of speed control of the vehicle. The process of identifying and subsequently responding to the technical means of the traffic organization by the intelligent systems of the vehicle. The hardware model is considered. By using the model, it is possible to achieve the movement of a vehicle only with the allowable speed and to exclude speeding as a result of the human factor, which is the determining factor of a traffic accident. 4 ill. Bibl. 3. Engl.; sum. in Russian.