

SUMMARIES

EQUATIONS OF TRAJECTORY OF CONNECTING POINT OF COUPLERS OF RRRRT TYPE SPHERICAL FIVE-BAR HINGED MECHANISM WITH TWO DEGREES OF FREEDOM AND ITS SYNTHESIS BY DESIRED CONDITIONS. **N. Davitashvili, A. Talakvadze.** Anniversary issue of the International Scientific Journal "Problems of Mechanics". Tbilisi, 2019, №2(75), pp. 13-22, (Engl.).

Is stated the kinematic research of RRRRT type five-bar spherical hinged mechanism with two degrees of freedom by analytical method. Are determined the positions, velocities and accelerations of output links and point of their mechanism. The obtained results as numerical example are presented graphically. 5 ill. Bibl. 27. Engl.; sum. in Russian.

AN APPROACH TO A FORM-ADAPTIVE COMPLIANT GRIPPER ELEMENT BASED ON MAGNETO-SENSITIVE ELASTOMERS WITH A BIOINSPIRED SENSORIZED SURFACE. **K. Zimmermann, J. Chavez Vega, T. I. Becker, H. Witte, C. Schilling, S. Köhring, V. Böhm, G. J. Monkman, N. Prem, D. Sindlersberger, I. Lutz.** Anniversary issue of the International Scientific Journal "Problems of Mechanics". Tbilisi, 2019, №2(75), pp. 23-38, (Engl.).

Magnetic hybrid composites are materials with a promising variety of applications due to their magnetic field tuneable mechanical properties. These special characteristics arouses interest in the study of their novel properties, particularly for the development of actuators, sensor systems and control mechanisms. Magneto-sensitive elastomers consist of a polymer matrix, usually composed of silicone rubber and silicone oil, with embedded magnetic particles. A field of application ideally suited to such materials is compliant (form-fit) prehension. Theoretical and experimental investigations are used to implement an end-effector for robotic systems based on this composite. A biomimetic sensory layer is added to a selected sample, and finally the behaviour in response to a defined deformation for a specific geometry is simulated using finite element methods. An outlook regarding the technological production potential is given. The described investigations form the basis for the development of a soft fully compliant form-fit gripper with variable stiffness and intrinsic sensing capabilities. 14 ill. Bibl. 44. Engl.; sum. in Russian.

DYNAMICS OF ROLL BALING MACHINE WITH VARIABLE MASS. **R. Makharoblidze, Z. Makharoblidze.** Anniversary issue of the International Scientific Journal "Problems of Mechanics". Tbilisi, 2019, № 2(75), pp. 39-45, (Engl.).

On the example of roll baling machine is studied the dynamics of transient processes with taking into account the gradual addition of pressing material mass. Is generated the design formula for change in velocity of aggregate movement due the gradual addition of plant material mass in the forward chamber. 2 ill. Bibl. 13. Engl.; sum. in Russian.

TWO-DIMENSIONAL UNSTEADY FLOW OF A VISCOUS INCOMPRESSIBLE FLUID IN A POROUS CHANNEL. **V. Tsutskiridze.** Anniversary issue of the International Scientific Journal "Problems of Mechanics". Tbilisi, 2019, № 2(75), pp. 47-51, (Engl.).

Two-dimensional unsteady flow of a viscous incompressible fluid through a porous channel is considered. This motion gets excited from the periodical time change of a pressure drop and a percolation velocity. Bibl. 12. Engl.; sum. in Russian.

DETERMINATION OF RATIONAL PARAMETERS OF THE DYNAMIC SYSTEM OF RADIAL FORGING MACHINE. **T. Natriashvili , S. Mebonia, A. Shermazanashvili.** Anniversary issue of the International Scientific Journal “Problems of Mechanics”. Tbilisi, 2019, № 2(75), pp. 53-59, (Engl.).

The results of the theoretical study of the dynamic system of the radial forging machine of the wedge-lever type are presented. The equivalent calculation scheme and corresponding differential equations of the dynamic system are compiled. After the transformation and solution of these equations, an expression for the elastic moment acting in the drive transmission of the radial forging machine is obtained. The analysis of the obtained expression for the elastic moment shows that the elimination of resonant modes of the dynamic system is possible by varying the natural frequency of the system or by the appropriate selection of the elastic-mass parameters of the drive parts of the radial forging machine. Based on the energy principle, a formula for calculating the mass of the flywheel drive machine. 3 ill. Bibl. 8. Engl.; sum. in Russian.

DESTROYERS OF EXPLOSIVE DEVICES AND OTHER OBJECTS. **V. Margvelashvili, R. Phartskhaladze, S. Sharashenidze, A. Shermazanashvili.** Anniversary issue of the International Scientific Journal “Problems of Mechanics”. Tbilisi, 2019, № 2(75), pp. 61-67, (Engl.).

The problem of search and neutralization of explosive devices and other explosive objects (EO), unfortunately, continues to remain relevant around the world in connection with frequent attempts of use of these devices for implementation of acts of terrorism during peaceful time period as well as their need for escalating volume of tasks in the field of humanitarian mine clearing. Destruction of explosive objects at the range of more than 10 m are carried out from different types of small arms and are widely applied. In this article destroyers of explosive objects within distance of less than 10 meters are considered. 5 ill. Bibl.13. Engl.; sum. in Russian.

TASK OF DYNAMIC LOADING OF COMPOSITE BODY DESCRIBED BY GENERALIZED MODEL. **B. Abesadze.** Anniversary issue of the International Scientific Journal “Problems of Mechanics”. Tbilisi, 2019, № 2(75), pp. 69-74, (Engl.).

Is stated the methodology describing the mechanical characteristics of composite bodies by having elastic elements four element generalized model. Is generated the rheological equation connecting the stress and deformation. Is stated the case of loading by damping in time external dynamic loading. The appropriate solution is constructed and analyzed. Are evaluated the conditions at that occurs the local resonance case. Are analyzed the conditions for avoiding such cases. Are made relevant conclusions. Ill. 2, Bibl. 18. Engl.; sum. in Russian

ANALYTICAL STUDY OF THE MAIN FACTORS AFFECTING TURNABILITY OF VEHICLE. **M. Tevzadze, Z. Chkhartishvili .** Anniversary issue of the International Scientific Journal “Problems of Mechanics”. Tbilisi, 2019, № 2(75), pp. 75-80, (Engl.).

With A view to determining the impact of the design and control modes on the lateral stability of the 4x2-type frontwheel-drive car, based on the road tests, the paper describes the analysis of the main factors affecting turnability of vehicle.

On the basis of the road-pilot study, it has been established that when driving a frontwheel-drive car in a sharp turn mode, the steering wheels are impacted by forces of both radial and longitudinal directions, whose value corresponds to 90% of the maximum radial force acting on the wheel.

In extreme conditions of curvilinear motion, due to the drag deterioration, the lateral slip of the steering wheels of a frontwheel-drive car begins earlier than in the case of the same class vehicle of classic arrangement. 2 ill. Bibl.3. Engl.: sum. In Russian.

DEVELOPMENT OF PERSPECTIVE SCHEMES FOR REPAIR OF BOGIES AND WHEEL PAIRS OF CARRIAGES REPAIR PLANT WITH APPLICATION OF MODERN TECHNOLOGICAL EQUIPMENT. **A. Sharvashidze, M. Paturashvili, D. Gogishvili.** Anniversary issue of the International Scientific Journal “Problems of Mechanics”. Tbilisi, 2019, № 2(75), pp. 81-86, (Engl.).

Is considered the perspective scheme of shop for repair of bogies of carriages repair plant with parallel arrangement of carriages assembly section and perspective variant of mechanized shop for disassembly of wheel pairs with application of new technological equipment.. 2 ill. Bibl. 6. Engl.; sum. in Russian.