ABSTRACTS

Section of «Mathematic problems of the technical mechanic»

UDC 539.3   Steblyanko P., Volosova N., Demichev K.   DETERMINATION OF TEMPERATURE STRESSES IN CYLINDRICAL BODY INCREASING BY KNOWN LAWS.   In given article is elaborated mathematical model of definition of non-stationary thermo-elastic strain-deforming station of increasing thick-walled cylinder which let to define the maximum value of intensity of strains in process of establishment of temperature in time.

Keywords: mode of deformation, method on-component splitting, nonstationary thermoelastic state.

UDC 539.3   Lugovyy P., Meish V., Meish Yu.   DYNAMIC INTERACTION OF CONSTRUCTIVE   ORTHOTROPIC   CYLINDRICAL   SHELLS   WITH   ELASTIC FOUNDATION.   In this paper the solution of dynamic problems interaction of reinforced cylindrical shells with the soil environment is represented. Dynamic behavior of reinforced cylindrical shell is described by axisymmetric vibrations equations of Timoshenko-type shell theory within constructive ortotropic model. The state equation of the soil environment is accepted according to model of nonlinear multicomponent liquid medium. Algorithm for solution of the problem of the interaction of a cylindrical shell with soils is based on using finite-difference scheme Mak-Cormack. The analysis of wave processes in the system reinforced cylindrical shell-soil environment is represented.

Keywords: reinforced cylindrical shells, elastic foundation, wave processes, numerical methods.

UDC 539.3   Bagno O.   WAVE IN A LAYER OF VISCOUS COMPRESSIBLE LIQUID LOCATED ON AN ELASTIC LAYER.   Within the framework of the three-dimensional linearized Navier-Stokes equations, a problem of propagation of harmonic waves in an elastic layer contacting with a layer of viscous compressible fluid is stated. A numerical study is carried out, the dispersion curves are constructed, and dependencies of phase velocity of normal modes on the viscosity of liquid, the thickness of solid layer and the layer thickness of liquid medium to a wide range of frequencies.

Keywords: elastic layer, layer of viscous compressible liquid, harmonic waves.

UDC 539.3   Vasiljeva L.   COMBINATION THERMO-MECHANICAL IMPULSE LOAD   OF   HALF   SPACE   INTO   ACCOUNT   MICROSTRUCTURAL TRANSFORMATIONS IN MATERIALS.   Problem of combined thermomechanical loading of halfspace by thermal and stress pulse is under consideration. The model of coupled thermomechanical inelastic response of the material with account for microstructural transformation (MST) is used. Influence of the MST on the residual stress-strain state is investigated.

Keywords: microstructural transformation, thermomechanical pulse loading, residual stress-strain state.

UDC 517.5   Davidchyk A.   ON THE APPROXIMATION OF ONE CLASS OF INTERPOLATING   FUNCTIONS   OF   TWO   VARIABLES   BY   TRIGONOMETRIC POLYNOMIALS.   We prove a theorem on the approximation of one class -2π periodic functions of two variables by trigonometric interpolation polynomials of order (m, n).

Keywords: function of two variables, trigonometric polynomial interpolation, the Dirichlet kernel.

UDC 517.5   Davidchyk A.   ABOUT ONE INEQUALITY FOR MODULE OF CONTINUITY.   Some inequalities are got for the module of continuity of function of two variables, 2π-periodical on each of variables. Inequalities will be exact, if protuberant on the top of function on $\omega(f; h, \delta)$ at fixed h, and on h at fixed δ.

Keywords: functions of two variables, inequalities for the module of continuity.

UDC 517.5   Derets E.   THE ESTIMATE OF THE INTEGRAL FUNCTIONALS IN H_1^ω.   For a convex modulus of continuity $\omega(t)$ and even $2\pi/n$-periodic function $g(t)$, monotone in half period, a lower bound of the functional $M(g, \omega) = \sup\limits_{f \in H_1^\omega} \int\limits_0^{2\pi} f(t)g(t)dt$ is obtain.

In addition, an example of a function and a convex modulus of continuity for which the above inequality is strict, is constructed, and it is shown, that in this case the extremal function $f(t)$ is not monotone in half period.

Keywords: integral functional, module of continuity, polynomial operator.

UDC 519.6   Huda J., Tonkonog E.   METHOD OF BOUNDARY PROBLEMS USING KVAZY-INTERPOLATION SPLINES.   This paper developed a method of solving boundary value problem, which is implemented with a built earlier generalized L-splines order three. The method is efficient and easy to use. It allows you to obtain the solution in analytical form throughout the domain of the problem with more precision compared to conventional methods collocation.

Keywords: boundary value problem, kvazy-interpolation spline, spline solution, L-spline.

UDC 629.33: 628.33   Aver'yanov V., Huda J.   DETERMINATION OF THE AXIAL COMPONENT OF THE FLUID VELOCITY IN THE FILTER UNITS.   The article deals with water spray fluid circular cross-section, moving in midair. Determine the maximum value of the axial component of the flow velocity of the liquid before the filter wall, which allows to determine the magnitude of the installation and performance of the filter material is a filter to select a partition to prevent damaging it during filtration.

Keywords: liquid jet, speed, filter unit.

UDC 536: 669.02.09: 669.054.82: 005   Voloshin R., Pavlyuchenkov I., Babenko M., Salo E., Vlasenko I.   SIMULATION OF MELTING DEOXIDANTS CYLINDRICAL SHAPE FERROALLOY FTI-30 BORDER SLAG – METAL.   In this paper the mathematical model and algorithm for solving the two-dimensional problem of calculation (based on the method Dyuzimbera) kinetics of melting deoxidizer cylindrical shape in the melt asymmetric boundary conditions.

Keywords: deoxidizer cylindrical method Dyuzimbera, asymmetric boundary conditions.

UDC 629.114.4   Redchits V., Rudasyev V., Golovin E.   STUDY OF CONTROL THREE-AXLE VEHICLE MANEUVERING "DISPLACEMENT".   This paper proposes a simple method for constructing trajectory of the three-axle vehicle in the commission of maneuver "displacement" with regard to the action of external forces and moments and determine the actual speed at a constant pedal position the fuel supply, which makes it possible to evaluate the behavior of the car during the maneuver at the design stage.

Keywords: three-axle vehicle maneuver "displacement ", the trajectory of the vehicle.

Abstracts

UDC 656.12.83 Shmatko D., Persan V. ANALYSIS OF CHANGES IN PARA-METERS VEHICLE MOVEMENT DURING TRANSPORTATION. The questions that allow you to solve the problem of determining the relationship between process parameters freight. The ground factors that affect the move.
Keywords: trucks, group factors, characteristics, route.

UDC 629.1.656.1 Shmatko D., Kochneva O. QUALITY EVALUATION CRITERIA AND INVESTIGATION OF EXPERTISE AUTOTECHNICAL ACCIDENT. Existing criteria for evaluating the quality of investigations and technical expertise auto accidents. The demanded set of indicators by problems arising in practice.
Keywords: evaluation criteria of quality, accident, autotechnical expertise.

UDC 656.071.8 Sasov O. ANALYSIS FEASIBLE AND APPROPRIATE RESTO-RATION PARTS AND A CHOICE OF HOW TO REMEDY DEFECTS IN THE OVERHAUL OF THE CAR. The techniques and criteria for the selection of rational method of restoration parts in major repairs cars.
Keywords: restoration of parts, corrected, technological equipment.

UDC 621.43 Sasov O., Dubikovsky O. STUDY OF IMPURITY BIOETHANOL ON THE OPERATING PROPERTIES OF PETROL. Modes of using ethanol as a component of motor fuel, its advantages and disadvantages. The problems arising from the use of ethanol in gasoline and ways to address them. Experimental study accordance samples of gasoline A-92 and A-95 ISO 4063-2001 and change service properties when added to petrol are between 5% and 85% ethanol.
Keywords: petrol, bioethanol, fractional composition of fuel.

UDC 662.7 Skornyakov E., Shmatko D., Martinenko S. PERSPECTIVE USE OF ALTERNATIVE FORMS OF ENERGY AS A SOURCE OF ROAD VEHICLES. The data on the use of non-conventional or alternative fuels used at present in the trucking industry and industry. There are analytical outlook on the further development of new power plants as a source of motive power for motor vehicles.
Keywords: alternative energy, hybrid vehicle.

UDC 004.415.5 Yakovleva S., Mikhailutsa O.M., Pozhuyev A.V. STUDY OF FUNCTIONAL REQUIREMENTS FOR QUALITY AND TESTING SOFTWARE. Concsidered the main factors of successful software product development work environment with changing requirements. Substantiated need for trace requirements procedures for project artifacts. Main attention is given to the importance of the introduction of team development in modern IT-companies.
Keywords: software testing, trasovanist requirements, team development.

UDC 539.3 Shevchenko Y., Galishin A., Steblyanko P., Banyas M., Degtyarenko P., Tonkonozhenko A. DEFINITION STATIONARY TEMPERATURE FIELDS IN THIN LAMINATED SHELLS OF REVOLUTION UNDER COMBINED HEAT EXCHANGE WITH THE ENVIRONMENT. This paper considers the problem of determining the axisymmetric unsteady temperature fields in thin laminated shells of revolution under the combined heat exchange with the environment. The results of calculations by the developed technique are compared with solutions for software package ANSYS.
Keywords: non-stationary axisymmetric temperature field, thin-walled structures, cylindrical shell.

UDC 621.431.73.004.5 Korzhavin Y. HYBRID CARS – WHICH HE BE, WITH WHICH THE ENGINE. We consider variants of hybrid cars, circuits of power plants that use hybrid cars, hybrid alternatives and their advantages and disadvantages. Modes of efficiency and hybrid options for their future development.

Keywords: hybrid car pnevmohibryd, hydro-hybrid diesel-hydraulic hybrid turbocharger impeller, the scheme Ingocar.

UDC 629.33 Burya A., Cherneta A., Movchan S. APPLICATION OF POLYMER COMPOSITE MATERIALS FOR MAKING CARS RELEASE BEARINGS. The conditions of release bearing composite insert technology of manufacture and serial advantages over analog.

Keywords: car, polymer composites, release bearing.

UDC 517.31 (075) Motorina V., Syzonenko E. THEORETICAL FOUNDATIONS OF GRAPHIC COMPETENCE OF TEACHERS OF MATHEMATICS ICT. This paper theoretically justified formation graphic competence of future teachers of mathematics and ICT opysni its stages. Investigated the benefits of information and communication technologies in the training of mathematics.

Keywords: information technology, graphic expertise, information, graphical method.

UDC 517.2 Derets E. PROBLEMS IMPROVING TEACHING METHODS HIGHER MATHEMATICS IN HIGHER TECHNICAL EDUCATIONAL INSTITUTIONS. This paper reviewed and analyzed ways to improve teaching methods of higher mathematics in higher technical education, effective during the practical exercises.

Keywords: mathematical training, teaching methodology, methodological support, individual tasks.

UDC 378.147 Tonkonog E. MODELING AS A PRINCIPLE OF ORGANIZATION OF THE EDUCATIONAL PROCESS. In this paper, a comprehensive model of pedagogical learning process in a technical college, proposed steps of designing the educational process, formulated the goal of building a model of the educational process, the requirements for developing a program of skills and knowledge.

Keywords: optimization of the learning process, learning model, information and communication technology, software - oriented planning.

UDC 655.3.066.364 Kyrychok T. ESTIMATION OF BANKNOTE PRODUCTION DURABILITY BY MEANS OF FORMING A COMPLEX DURABILITY INDEX USING A UTILITY FUNCTION. It was suggested a conceptual model for determination of the complex durability index taking into account the large number of deterioration indices (optical, size, structure, strength, local damages, magnetic, electro, ink damages) using a utility function for multi-criteria estimation of durability means and choice of optimal technology process for banknote production. The algorithm and software for determination of the complex durability index were created.

Keywords: banknotes, wear, wear index, wear resistance, resistance, circulation of banknotes, profitability function.