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Summary

PHYSICAL AND MATHEMATICS SCIENCE

A. A. Kolokolov, N. A. Rubanova

The bounds of iteration number of decomposition algorithms for solving bilevel plant location problem

This paper continues study of algorithms based on Benders decomposition for solving some plant location problems. The bounds of the number of decomposition algorithms' iterations, which the authors proposed before for solving bilevel plant location problem, are obtained.

Keyword: bilevel programming, plant location problems, Benders decomposition, cuts, bounds of the number of iterations.

A. M. Zavyalov, M. A. Zavyalov, E. A. Bedrin

Mathematical model of the active layer of soil functioning as the thermal diode

The mathematical model of the device providing increase of frozen soil properties is designed and analyzed on the basis of computing experiment.

Keywords: mathematical model, the thermal diode, frozen soils, computing experiment, thermal stream.

O. G. Zhukova

The problem of precise controllability for one-dimensional hyperbolic system of heat conductivity equation

We consider the dynamical system which simulates the process of heat conduction in a bar within the framework of hyperbolic law. The temperature regime at the bar's edges (*the control*) was calculated. It transfers the initial state into preset one at the predetermined moment of time.

Keywords: boundary control, hyperbolic heat conductivity, Riemann matrixes.

MECHANICAL AND THEORETICAL ENGINEERING

D. A. Negrov, E. N. Eryomin

Ultrasonic oscillations impact on the structure and mechanical properties of a polymeric composite material

Studying the impact of parameters of ultrasonic pressing on the structure, mechanical and tribotechnical properties of Teflon based polymeric composite material is carried out.

Keywords: a composite material, hypersonic oscillations, structure, inoculation.

V. S. Kushner, A. N. Zhavnerov, A. V. Udodova

Improvement of cutting properties of the tool at processing of heat resistant alloys

Main ways of improvement of hard alloys are analyzed. It is shown, that reduction in sizes the carbide grains is effective for improvement of work-

ing capacity of the tool at cutting of nickel alloys and is inefficient for titanic alloys. The features of distribution of temperatures and specific tangential force are revealed at cutting of heat resisting titanic and nickel alloys. Preliminary tool blunting and wearing criteria on back surface are obtained.

Keywords: hard alloys, heat resistant alloys, cutting tool geometry.

I. G. Brailov, S. L. Ibrayaminova, T. M. Myasoedova

Differential characteristics: normal, binormal to the tooth edge of the end-milling cutter

The work defines dependence expressed by the vector functions describing differential characteristics (normal, binormal to the tooth edge of the end-milling cutter) components of the milling force.

Keywords: end-milling cutter, tooth surface, vector function, normal, binormal.

Yu. K. Korzunin, E. N. Merkushev, V. P. Rashchupkin, O. Yu. Burgonova
The solution of a problem of low heat stability and different grain size in high-speed steel for cutting tools

Optimization of modes of high-heat treatment providing maximum heat stability of the cutting tool - made of high-speed steel and also finding out of the reason of misfit of the grain size of austenite with martensite one. Two modes of heat treatment for raising - of working capacity of cutting tools are offered-.

Keywords: high-speed steels, high-heat treatment, heat stability

V. S. Kushner, O. Yu. Burgonova, S. V. Langeman

Perfection technique of theoretical definition of temperatures and forces of cutting for tools of high-speed steels

The technique analyzing the chip front angle and its shrinkage under turning and milling of steel on temperatures of cutter face and back surfaces of the cutting edge is done. Dependences of the real front angle of chip and its shrinkage on average temperature of the front edge are determined on the basis of experiments and initial data for calculation of temperatures and forces of cutting. It is shown, that taking into account the scale raises accuracy of theoretical definition of the temperature and forces of cutting.

Keywords: temperatures of cutting, force of cutting, high-speed steels.

O. S. Lomova

Forming parameters of accuracy of intermittent surfaces of rotation type parts

In the article the questions of achieving exactly the size and cylindrical shape of parts with intermittent surface is considered. It is proved that the source of inaccuracy is clearances in connections of movable of units of a machine-tool. In order to eliminate their influence it is suggested to use basic schemes of correction nodes of machine components together with rational choice the line of measurement.

Keywords: accuracy of processing, shape formation, cylindrical details with intermittent surfaces, the line of measurement, the correction of nodes of machine-tools.

K. V. Averkov, D. S. Rechenko
Improving the quality of surface finish in grinding of heatproof alloys based on nickel

The article discusses the features of grinding of heatproof based on nickel. The authors have indicated the significant role clogging of the grinding wheel during the formation of surface quality, and a possibility to reduce clogging by increasing cutting speed. The conclusions obtained are confirmed experimentally.

Keywords: heat-resistant alloy, grinding wheel, bringing, adhesion, cutting speed, surface, roughness.

D. S. Makashin
The influence of geometrical parameters of a spiral drill on a deviation from cylindrical axis at drilling of titanic alloy

The analysis of influence of geometry of a cutting part of a drill on a deviation from cylindrical is resulted at drilling of titanic alloy. It is shown considerable influences only some constructive elements of the tool on not cylindrical apertures.

Keywords: drilling, alloys of the titan, drill geometry

O. S. Lomova
Cylindrical parts final processing

The paper deals with the modeling of forming a cylindrical surface of a part in a circular grinding machine. The types of a central-point part contacting are studied. The design procedure of a form error is proposed for various cases of displacement of a part rotation axis in grinding.

Keywords: misalignment of a piece revolving, generation of geometry of work piece surface, effect of cutting resistance, centers of circular grinders, setting surfaces, misalignment of machine tools centers.

V. G. Khomchenko, A. S. Gorbatykh
The trajectory planning with spline-interpolation on the grid with unlimited number of additional control points

Two general cases of manipulator gripper trajectory planning in the joint-coordinate space with arbitrary number of additional control points are considered. In the first case the value of coordinates is not regulated and it is regulated in the second case. The expression for total power calculation of spline constituent polynomials is found. The method of interpolation points number and arrangement choosing taking into account the interpolant local behavior is presented.

Keywords: manipulator, trajectory planning, interpolation, spline.

S. V. Eliseev, A. P. Khomenko, Yu. V. Ermoshenko
Dynamics of mechanical oscillation systems with ties between coordinates

Methodical basis for designing transport suspension mathematical models of vibro-protection systems are suggested. Considered systems have lever mechanisms and additional ties, which can be designed by using a set of elementary typical links.

Keywords: vibroprotection system, dynamical absorption of oscillation, lever links and ties.

E. S. Gebel, A. A. Jomartov, B. Sinchev
Synthesis of a four-lever mechanism using optimization technique

A new precise method for kinematic synthesis of mechanisms is offered. Метод кинематического синтеза механизмов базируется на методах оптимизации и геометрических свойствах многоугольников. Эффективность данного метода по сравнению с известными методами кинематического синтеза передаточных механизмов заключается в меньшем задании количества положений входного и выходного звеньев, а достоинством - является то, что длины звеньев механизма определяются из системы линейных уравнений, основанной на исходных уравнениях кинематики. The method of kinematic synthesis of mechanisms based on the methods of optimization and geometric properties of polygons is applied. The effectiveness of this method compared with the known methods of synthesis of the kinematic function-generating mechanisms is a smaller setting number of the input and output links, and dignity - is that the length of the link mechanism are determined by a system of linear equations based on the original equations of kinematics.

Keywords: kinematic synthesis, optimization, function-generating mechanisms, vector.

N. A. Ivanova, V. S. Scthetinin, A. V. Kosmynin, A. S. Khvostikov, S. S. Blin-kov

The influence of the constructive particularities front gas-magnetic full tilts spindle node on his output features

The equations system analysis for determination of the spindle unit with a front gas-magnetic bearing and back gas-static bearing operational characteristics has shown that the design parameter named K_C influences essentially on the spindle unit output characteristics. The spindle unit with a switched on magnetic suspension operating mode is applicable for rough and semismooth operations when the raised cutting force and low accuracy of billets processing are required. The further smoothing and finishing detail processing is provided for one installation. It's realized without the detail taking out from the machine tool at the spindle unit operating mode with switched off magnetic suspension when high cutting force is not required, but high rigidity is necessary.

Keywords: spindle assemblies, gas-magnetic bearing, spindle bearings, gas-static bearings, bearing ability, rigidity spindle assemblies

S.V. Eliseev, Yu.V. Ermoshenko, R. S. Bolshakov
The influence of dynamical absorber location on dynamical properties of vibroprotection systems

The problems of dynamical absorber location on the 2DOF object properties are considered. Building of effective system of protection from vibration and getting additional modes of dynamical absorption with lever coupling are offered.

Keywords: dynamical absorption of oscillation, coupling of rigid bodies, vibroprotection systems.

P. D. Balakin, I. P. Zgonnik
Analysis of dynamics of adaptive autovariator

The dynamical model of autovariator is developed harmonizing components transforming power for different variants of the variable external loading.

Keywords: avtovariator, dynamics, controlled by coordinate, transfer function.

I. L. Ryazantseva
Profile updating of heavy-loaded toothed wheels

The influence of working conditions of spur gears, in particular, load intensity transferred by them, on the depth of a linear updating of a theoretical initial contour is investigated. The necessity of profile updating of heavy-loaded wheels of a fine precision is proved. Recommendations for choice of the form and parameters of profile updating are given.

Keywords: profile updating, updating parameters, toothed gearing, gearing deformation, edge contact.

P. D. Balakin, O. S. Dyundik, E. A. Dyundik
The block diagram for adaptive frictional autovariator

The construction of adaptive frictional variator providing automatic change of the transfer rate depending on the level of loading is offered. The evaluation of contact pressure is done to prevent approaching to the limitation zone of s_{max} .

Keywords: avtovariator, adaptation, a construction, the scheme, the transfer relation, a diaphragm.

A. V. Borodin, Yu. A. Ivanova
Evaluation of loading resource of combined support of freight car axis

The procedure of evaluation of a loading resource of the combined support of an axis of the freight car consisting of rolling bearings and the thrust device in the form of spherical thrust bearing, intended for perception of a horizontal component of the dynamic load is offered.

Keywords: support, resource, wear rate, clearance.

I. L. Ryazantseva, Yu. V. Nikiforova
The preload connection contact pressure

The results of solving of a contact problem in a cylindrical preload connection are presented. The problem is solved by the finite element method. The influence of design features of connected details on the intensity of contact pressure is shown.

Keywords: durability, contact pressure, preload connection, updating of joining points, grooves.

A. Kh. Shamutdinov
The analysis of classification of multi-lever mechanisms with parallel kinematics

New classification of multi-lever mechanisms and in particular six lever mechanisms with parallel rod type are considered. The location of multi-lever mechanisms parallel structure in the classification table is offered and options for assessing the stiffness characteristics of these mechanisms are resulted.

Keywords: the multi lever mechanism, elementary structure, the mechanism of parallel structure, symmetry factor, Stewart's platform, rigidity of the mechanism.

V. A. Sokolov, E. A. Bondarenko
Welding of polyethylene pipelines of major diameters

The results of the research of the form and size of seams of welding joint of polyethylene pipes are given, some recommendation are suggested to improve quality of such welded joints which can be used in building of water-pipelines.

Keywords: Water-pipeline, seam, welded joint, mechanical tests.

A. S. Losev, E. N. Eremin, G. P. Rumyantsev
Analysis of thermal stability of the deposited maraging metal with composite structure

The results of analysis of thermal stability of maraging steel of Fe-Ni-Mo-Cr-V-Si-Ti-Al type alloy with composite structure, hardened by boron compounds are demonstrated. The borides role in increase of thermal stability of deposited metal is analyzed.

Keywords: deposited metal; maraging steel; borides; fatigue strength; thermal stability.

V. A. Sokolov, O. M. Miroshnichenko
Problems of checking quality of polyethylene gas pipelines welded by fittings with inserted heater

The results of the research is the reasons for lowering stability of quality of welding of polyethylene pipe by connecting details with inserted heaters and some recommendation are suggested to improve quality of such welded joints which can be used in building of gas pipelines.

Keywords: Gas pipeline, fitting with inserted heater, welded joint, mechanical tests.

D. V. Starshev
The influence of the cooling mode for grinding on quality of surface layer

It is shown that under grinding on characteristic surface layer essential influence renders the nature of the cooling. The brought graphs to dependencies to hardness surface layer from velocity of the cooling. The graph of the experimental studies of the change the temperature in grinding process is presented. The offered method of management factors quality of the processed surfaces.

Keywords: grinding, cooling, temperature, hardness.

Z. N. Sokolovskiy, E. P. Stepanova
Dynamics of finally mass systems with elastic elements with straight cores on the basis of full mathematical model of their flat bend and stretching

The algorithm of numerical calculation of dynamics of finally mass modules with elastic elements in the form of straight cores taking into account dependence of a pliability on movings is offered in the article. Pliability is defined on the basis of the numerical analysis of full mathematical model of a flat bend and a stretching of a direct core. The results are compared with the traditional calculations which are not considering communication of longitudinal and cross-section motions.

Keywords: dynamics certainly mass systems, elastic elements.

A. P. Morgunov, K. N. Pantyukhova
Simulation process of contact interaction profile embraced element with cylindrical iron ring method finite elements in surroundings COSMOSWORKS

The authors set new construction device for landing timber details representing junction enveloped elements with smooth surface and embrace profile elements. It considers the description of mathematical junction method finite elements and analysis the process of technological making detail junction and their assemblage.

Keywords: junction of profile, insertion of hardalloy, element of embrace and enveloped, captivate factor, method finite elements, indenter.

M. I. Biserikan, A. V. Obryvalin, A. A. Rauba
The influence of load increasing on dent formation on rolling surface of rail wheels made of hardened steel

The article considers the influence of increasing load on the axle wheelset and an increase in velocity on the formation of вугры in the process of

contact interaction in a system of wheel-to-rail at deviation of the profile form as a result of insufficient effective technology overhaul. Calculations of the stress-strain state, a model of treatment of solid wheels, allowing to reach the required quality of the surface.

Keywords: wheel increased hardness, thermomechanical damages, technological heredity, stress-strain state, endurance breakdown.

A. P. Morgunov, K. N. Pantyukhova
Improvement of die construction and technological thermal processing of the profile die with hardalloy insert

The authors consider construction setting for cold pressing of bar details and technological thermal assembling of locking profile junction die with hardalloy insert with different scheme layout.

Keywords: frame die, hardalloy insertion, area of supporting surface, profile junction, strength, tension.

E. A. Pavlyuchenko, V. E. Shcherba, A. P. Bolshtyanskiy, E. A. Lysenko, A. K. Kuzhbanov.
Mathematical model of working processes of rotational pump-compressor for small car repair shops

In the work problems of mathematical modeling of working processes of pump and compressor sections of the rotational pump-compressor with a sliding rotor are considered. The equation of a condition of ideal gas, laws of preservation of weight, energy and dynamics of movement are put into a basis of mathematical models of processes the first law of thermodynamics for a body of variable weight. Results of comparison of display diagrams of compressor and pump cavities of the rotational pump-compressor received settlement and experimentally are resulted.

Keywords: Working processes, mathematical modeling, the pump-compressor, the display diagram.

V. E. Shcherba, E. A. Pavlyuchenko, E. Yu. Nosov, G. A. Nesterenko, A. K. Kuzhbanov.
The analysis of influence of constructive and mode parameters on operation of multi-purpose pump-compressor for small car maintenance services

In the work the analysis of influence of the basic constructive and mode parameters on profitability and productivity of work of the rotational pump-compressor with a sliding rotor is considered. The basic results of calculations received at carrying out of the analysis of influence of a corner of disorder between plates, speeds of rotation of a shaft, degree of increase of pressure, relative rotor and relative rotor height on power characteristics the pump-compressor of the unit and its productivity are resulted.

Keywords: pump-compressor, power characteristics, relative rotor, relative height of a rotor.

E. A. Lysenko, A. P. Bolshtyanskiy, E. Yu. Nosov, G. A. Nesterenko
Source of compressed air for service and repair of vehicles

In the article the structure and design procedure of the air compressor without its pollution for service and repair at car repair shops of cars is considered. The scheme of completely dynamically counterbalanced drive gear is resulted. The design procedure of working processes and the efforts operating in such gear is resulted.

Keywords: the piston car, drive, dynamics, accuracy.

R. N. Ivanov, V. V. Shalay, E. V. Khodoreva, S. E. Zakharov, M. V. Kucherenko
The method of preliminary design of power system of microsatellites

In this article we consider the choice of power system of microsatellites at a preliminary design stage with use of the method of analytical hierarchy.

Keywords: power system, method of analytical hierarchy.

B. A. Kalashnikov, N. N. Rasskazova
The object mass influence on the frequency characteristics while keeping up its constant position

The object mass influence on the main design parameters and on the resonance parameters of system shock-absorber vibrations with discrete commutation of pneumatic elements was investigated. Keeping up the constant object position under the changing of its mass is performed by pneumatic and hydraulic methods and by the various schemes of their implementation.

Keywords: own frequency, constant position, keeping up the level, the ratio of resilient element parts' mass, frequency characteristics.

A. S. Nenishev, A. G. Mikhailov, P. A. Batrakov, D. S. Romanenko, S. V. Terebilov
Modeling of the reacting environment in furnace chambers of boilers

The article deals with the oxidation reaction used for evaluation of combustion of gaseous and liquid fuels in furnaces boilers. Particular attention is paid to the formation of nitrogen oxides during combustion of organic fuels.

Keywords: combustion, chemical kinetics, organic fuel, oxides of nitrogen.

V. I. Trushlyakov, V. Yu. Kudentsov, I. Yu. Lesnyak, A. Yu. Kazakov
Developing techniques for theoretical and experimental studies of low-temperature gasification of liquid

On the basis of the control volume method was designed and constructed a small experimental model and the experimental test bench for simulation of thermodynamic processes of gasification of liquid at different positions. Formulated the basic situation and developed techniques of theoretical and experimental research on the gasification of the liquid to simulate the conditions of low gravity.

Keywords: experiment, model installation, gas, liquid, method

V. V. Tokarev, Yu. A. Kraus
Monitoring pipeline defects by the frequency method

The diagnostics of gas pipeline is done by means of the frequency method. This method will help to get the efficient information about controlled sector with low costs and resolution, but at any time. This method is based on generation of linear part of supersonic frequency signal, which is modulated by tact impulses.

Keywords: diagnosis, pipelines, monitoring, spectrum, frequency method

V. I. Trushlyakov, V. Yu. Kudentsov, I. Yu. Lesnyak, A. Yu. Kazakov, A. S. Kurochkin
Experimental research of the process of low temperature gasification of liquid

With the use of experimental stand the series of research are conducted on the study of thermodynamics processes of gasification of liquid with its different boundary conditions.

On the basis of experimental research calculation dependences are offered for the mathematical model of process of gasification of the liquid.

Keywords: experiment, model installation, gas, liquid

V. G. Tsyss, M. Yu. Sergaeva, A. M. Lyubykh, A. A. Sergaev
Finite element analysis of stress-strain state for metal-rubber damping elements of seismic isolation systems related to liquid hydrocarbon spherical storage tanks

The use of metal-rubber seismic isolated supports (MRSI) for seismic isolation systems of liquid hydrocarbon spherical storage tanks was evaluated. Stress-strain state analysis was done for metal-rubber damping elements as part of MRSI. Based on calculations of stress-strain state, it was concluded that the addition of metal-rubber damping elements to spherical storage tank seismic isolated support structures allows to decrease the shear load and bending moment values in 1.5 - 2 times.

Keywords: seismic isolation, spherical storage tank, metal-rubber damping element, stress-strain state.

V. I. Ivanov, A. P. Serkov
Support of durability of engines of road-building machines by sampling and assignment of rational periods of substitution of engine oils

Efficiency of operation of road-building machines (RBM) essentially depends on non-failure operation and durability of engines of their powerplants. The most perspective ways of increase of durability of units of machines with the closed systems of greasing, the correct choice of lubricants, and also appointment of rational ways of their replacement taking into account quality assurance are. An estimation of indicators of quality of engine oils of engines RBM on parameters of their limiting condition, forecasting of rational terms of replacement should be carried out by simple enough, authentic operational methods.

Keywords: the engine, reliability, engine oil, a resource, forecasting, an operating time.

I. M. Zuga, V. G. Khomchenko
Computer-aided design of the facilities layout within the enterprises based upon the condition of occupied area minimization

The computer-aided solution to the occupancy problem for the facilities within enterprises operating in various industries (machine-building, petrochemical, etc.) is suggested for the cases when facilities possible location is unfixed based upon condition of occupied area minimization for facilities.

Keywords: computer-aided design, layout, area minimization, unfixed facilities locations, nonlinear programming.

U. K. Sabiev, V. V. Fomin
Decrease in power consumption of crushing of grain in small-sized centrifugal grinder

In the article the method of decrease in power consumption of crushing of grain in the small-sized centrifugal grinder, based on that assumption that at the expense of optimization of the angle of cutting of material according to the change of friction factor on working bodies of a centrifugal grinder, decrease in power consumption of process of reception of a ready product is considered.

Keywords: power consumption decrease, crushing, small-sized centrifugal grinder, a cutting corner.

ELECTRICAL AND POWERENGINEERING. INSTRUMENT ENGINEERING, METROLOGY, INFORMATION MEASURING SYSTEMS

O. A. Lysenko, A. I. Miroshnik
Modes of electromechanical energy complex: a centrifugal pump - induction motor

Investigated modes of electromechanical energy complex: a centrifugal pump - induction motor (IM-CP). Adjusting characteristics at a scalar frequency control induction motor are determined. The results of numerical simulation are obtained.

Keywords: energy efficiency, asynchronous motor, centrifugal pump.

S. V. Birykov, S. S. Kolmogorova
Realization of the three-coordinate measurements method for design of electrostatic field sensor

This article is concerned about three-coordinate measurements method and its features for design of three-coordinate spherical electroinduction sensor of an electrostatic field intensity.

Keywords: electrostatic field, three-coordinate measurements method, intensity

INFORMATION TECHNOLOGY

V. I. Potapov
Computation of indicators reliability of neuron system with man-assisted machine complex of control and management tuning and restoring process after neuron net failing

Three mathematical models for computation indicators reliability of neuron system with man-assisted machine complex of control and management tuning and restoring process after neuron net failing with absolute and finishing reliability of a man-operator are considered in this article. Some formula for computation of variety of trouble – free operation, coefficient readiness and average access time of trouble – free operation of neuron system is given here.

Keywords: mathematical model, neuron net, neuron system, reliability, teaching of neuron net.

M. A. Boganets
Methods and algorithms for artificial neuron with non-linear activation function diagnostic

The article considers artificial neuron with non-linear activation function diagnostic methods and algorithms for failures diagnostic. Artificial neuron model with diagnostic possibility are submitted.

Keywords: artificial neuron, non-linear activation function, failure, diagnostic methods, diagnostic algorithms.

A. V. Mytsik.
Using ImageJ software application for automated morphometry of histological studies

This article shows how to use the application ImageJ to automate morphometry.

Keywords: histology, morphometry automated, ImageJ.

S.V. Zykin, P.G. Redreev, A.K. Chernyshev
Formation of data representations for construction of medical diagnostic scales

In the work the automation problem of data representation construction with list of components from source relational data representation is considered. The basis of construction is formal definition of intermediate and target data models. The obtained representations are used in the data analysis at construction of medical estimate scales.

Keywords: multidimensional data representation, data analysis.

V. I. Nikonov, E. V. Shcherba, M. V. Shcherba
Analysis of the integrated approach to data protection in the transmission over distributed wireless networks

Development of IEEE 802.11s standard and the concept of Mesh-Networks will increase the importance of the protection of data transmitted via wireless wide area. The article provides an alternative approach, which allows to lower the probability of successful attack at an information transfer in wireless networks without the use of encryption algorithms.

Keywords: wireless networks, Mesh-networks, network protocols, network attacks, Routed service, multiplexing traffic, the Internet.

O. N. Demchenko, A. B. Korobova, M. N. Rasskazova
The application of combinatorial method for automation of teenage wardrobe patternmaking

The main aspects of the combinatorial method that can be used with the automation of the teenage wardrobe patternmaking are considered in the article; the task of wardrobe patternmaking is formulated; the content and structure of data base for patternmaking application system is described.

Keywords: teenage wardrobe, the automation of the patternmaking, combinatorial combinations, basic goods element, database, data structuring.

M. A. Zhbannikova, A. B. Korobova, A. G. Burtsev
The general concepts and modules of software product for removal of dimensional signs of girls-teenagers figure features in the automated mode.

In article considers the perspectives of use, general concepts, modules and work's principle of software product for gaining dimensional characteristics of girls-teenagers figure features in the automated mode and construction of trousers design.

Keywords: dimensional characteristics, the design construction, the automated designing, programming language C, operating system, libraries of s of the interface element libraries of GTK.

RADIO ENGINEERING AND COMMUNICATION

M. L. Kostochkin, V. A. Arzhanov
The analysis of methods of increasing of amplifiers linearity

Modern methods of increase of linearity of amplifiers are considered. The attention is focused on amplifiers with «noiseless» linear negative feedback and feed forward amplifiers. The comparative evaluation of parameters of various circuits of amplifiers with «noiseless» linear NFB is resulted.

Keywords: dynamic range, sensitivity, linearization, «noiseless» linear NFB.

L. G. Rogulina
Morphological method of design of power supply unit for telecommunication

The method of morphological syntheses is considered in this work for multivariable optimization of power supply unit. The method is structured, parametric and topological. System approach to the analysis of the unit in stationary and not stationary modes allows to conduct the a priori estimation of the energy factors and within the system noise of the hindrances.

Keywords: morphological syntheses, installing power supply, multivariable optimization, simulation modeling.

D. A. Titov, E. D. Bychkov
The algorithm of fuzzy classification of objects

The algorithm of fuzzy classification of objects is designed. This algorithm classifies the objects and adaptively corrects the classes. The structure scheme of the devices, which realizes the algorithm, is shown.

Keywords: algorithm, classification, self-organization, correction of classes.

K. V. Murasov, A. V. Kosykh, S. A. Zavyalov, A. N. Lepetaev
Modeling a source of current with the control of temperature factor for application in the integrated thermo-compensated quartz generators

In the article results of work on modeling of an integrated source of the current intended for the subsequent introduction in the system on a crystal are presented. The multitransistor sources of a current possessing negative and positive temperature factors are considered. The influence of loading and voltage on stability of the target current is investigated.

Keywords: source of current, temperature factors, bipolar transistor, current mirror, multiplier.

V. A. Arzhanov, G. S. Nikonova, S. A. Doberstein
Low noise surface acoustic waves oscillators. Key design principles.

In the article principles of design of surface acoustic waves (SAW) oscillators are considered. Topology and frequency characteristics of SAW delay lines are analyzed. Filter schemes of SAW- oscillators are offered.

Keywords: SAW- oscillators, SAW-filters, SAW- delay lines.

Brief message

S. S. Gritsutenko, E. B. Kvitkova, E. I. Markova
Video data transfer by technology WiMAX

Modern algorithms for coding of video signal have different productivity. Therefore the task of matching of source productivity and channel capacity is urgent now. The article shows that technology WiMAX is good enough for video signal transferring.

Keywords: throughput of the channel, productivity of the source, algorithm of video compression, WiMAX.

PUBLISHING. POLYGRAPHY

L. G. Varepo
Distribution of printing ink in the structure of printed material

In the given article the results of research of distribution of a printing ink in the structure of cross-section of cardboard by means of scanning by super microscope are presented.

Keywords: printing ink, cardboard, structure.

S. P. Makarieva, I. A. Sysuyev
The development of methodology for evaluation of the quality of the composition and journal publications (for example, the Omsk regional advertising and informational magazines)

The article considers issues, which are associated with evaluation of the quality of the composition and make-up of journal publications. Five Omsk regional advertising and informational magazines were selected to carry out the research. The criteria of evaluation are defined, as a result of the analysis are revealed the most often errors of the composition and make-up of text and their ranking is made. It is offered to use the reduced indicator for an estimation of quality of the composition and make-up – a total rank of the errors, which are contained in the publication, related to the fixed volume of the publication. The quality of chosen publications is evaluated.

K. B. Vorobyev, I. A. Sysuyev
Optimization of color reproduction inkjet plotter

The article considers issues, which associated with research of the color gamut of printing systems «computer – inkjet plotter Infiniti FY-33VB» on banner fabric Frontlit and PVC-film ORAJET 3640. While carrying out the research, the method for estimation color gamut of monitor, including use of a universal text-scale, which allows to describe color gamut of the monitor and printing system, and also the technique of measurement the color parameters of fields of a text scale on the screen with use of the standard software of a colorimeter Eye-One Display 2 were developed. Color gamut of researched system of the print was estimated. Data for ICC-profiles of the inkjet plotter were prepared.

Keywords: printing system, inkjet printing, color gamut, text-scale, the technique of measurement the color parameters.

ENGINEERING GEOMETRY AND COMPUTER GRAPHICS

K. L. Panchuk, I. V. Butko, V. Yu. Polshkov
Profiling the rounding tool for processing of screw surfaces

In the theory of profiling of cutting tools the method of profile normals based on drawing of a normal to the surface from points on the surface is known. In this work the solution of the problem of profiling of rolling tool, based on drawing the normal to the surface from the external point is offered.

Keywords: contact normals, orthogonal projection, the characteristic, a gearing line.

A. A. Lyashkov
Shaping helical surfaces by a rack-type tool

A method of forming of a rolling tool shape, based on the changing the plane problem into spatial one. This approach involves the introduction of the auxiliary surface, the study of its geometric characteristics which influence the shape of profile rail screw surface. The results obtained describe the picture forming surfaces enable to solve our problem by means of computer graphics visualizing the process of formation.

Keywords: geometric modeling, shaping, quasi-screw surface.