# CONTENTS

# SUMMARY

## ENGINEERING GEOMETRY AND COMPUTER GRAPHICS

**V. Yu. Yurkov**
**About linear correspondences defined by multidimensional enumerative geometry**

This paper is devoted to some enumerative properties related to the incidence conditions of special forms which are in multidimensional spaces. In particular, some reductions of the forms connected with linear correspondences are considered. Our results of the reductions could be regarded as properties of correspondences. There are no limits in dimensions and it allows to define constructive geometric problems of flag manifolds by algebraic operations with symbols of conditions.

Keywords: manifold, correspondence, incidence condition, reduction of condition.

**V. Yu. Yurkov**
**Structural determination of multidimensional euclidean space visual models**

This paper is devoted to the problem of Multidimensional Euclidean Space visual model constructions. The visual models of various structures are considered. It is shown that general affine correspondences are the principal structural components of the models.

Keywords: multidimensional spaces, visual models, correspondences.

## PHYSICAL AND MATHEMATICAL SCIENCES

**I. I. Gontchar, M. V. Chushniakova, I. A. Drozdova**
**Analysis of capture reaction $^{58}$Ni+$^{60}$Ni using the trajectory dynamical model**

The experimental capture excitation function in the reaction $^{58}$Ni + $^{60}$Ni is analyzed with the aid of a trajectory model with surface friction. The heavy ion collision is described by the stochastic differential equations accounting for dissipation, thermal fluctuations, and memory effects. In order to model the dissipation, the surface friction model is used where the friction force is proportional to the squared of the derivative of the nuclear part of the nucleus-nucleus potential. This part of the potential is calculated using the double folding model. In this model, the density dependent M3Y NN-forces with the finite range exchange term are involved. It turns out that the calculated excitation function is sensitive to all the variable parameters of the model which are the diffuseness of the nuclear matter distribution, the strength of radial friction, the correlation time of the random force. The best value of the Pearson criterion $\chi_н^2$ obtained in the calculation is about 10.

Keywords: heavy ion fusion, stochastic differential equation, double folding potential, retarded friction.

**V. I. Potapov**
**Mathematical model and algorithm of solving problem of counteraction in conflict situation of two restored systems after failure**

Mathematical model of counteraction of two restored technical systems after failure in conflict situation is developed and the problem has been provided. The algorithm of solving provided problem is carried out and the given task has been connected to differential game between two conflicting systems.

Keywords: mathematical model, conflict situation, counteraction, differential game, players strategy, prize function, attack.

**V. I. Potapov**
**Confrontation (differential game) between moving controlled objects**

Approach and mathematical model of the game task of confrontation between moving objects controlled by two gamers are given and developed. Differential game is led to matrix solving of which is finding in mixed strategies.

Keywords: mathematical model, confrontation, differential game, moving objects, game function, gamers strategies.

**O. V. Kropotin, S. S. Akimenko, V. A. Gorbunov, P. V. Stishenko, V. F. Fefelov**
**Influence of interfacial interaction in polytetrafluoroethylene filled with graphite on the density of matrix**

Interfacial interaction in polytetrafluoroethylene filled with graphite is studied using molecular dynamics simulation.

Keywords: molecular dynamics, interfacial interaction, graphite, polytetrafluoroethylene.

**M. A. Chizhik, M. N. Rasskazova, I. A. Sheveleva**
**The construction of multi-criteria model of competitiveness of clothing products using generalized convolution function**

The paper presents a method of generalized convolution function for multi-criteria decision problems. A model of the competitiveness of down clothing produced by different manufacturers allows to estimate each alternative by several criteria.

Keywords: the additive method of optimization, the folding function, the private criterion, the normalization criteria.

**D. N. Zaporozhets, A. V. Zykina, O. N. Kaneva**
**Variational inequalities for simulation of optimal reservation of renewable resources**

In the work is proposed and justified the method of mathematical modeling in problems of optimal reservation of renewable resources. The proposed method is based on using of variational inequalities in modeling of two-level optimization problems. As a practical example of using the method reviewed the problem of reservation of the seed Fund in the agricultural sector.

Keywords: mathematical modeling, variational inequalities, two-level optimization

## CHEMICAL SCIENCE

**I. A. Kirovskaya, M. V. Vasina, A. V. Yuryeva, M. E. Shalaeva, E. N. Eremin, Yu. I. Matyash, S. A. Korneev**
**Chemical composition and acid–base surface properties of solid solutions $(ZnTe)_x (CdSe)_{1-x}$**

The methods of infrared spectroscopy, hydrolytic adsorption, nonaqueous conductometric titration study chemical composition and acid-base properties of solid solutions of system ZnTe–CdSe in comparison with the original binary components. There are established the main agents responsible for the chemical state of the surface, nature, power, total concentration of acid sites, patterns of changes in acid-base characteristics of the composition of the system. The conclusion is done on the greatest activity of the surfaces of solid solutions of compositions $(ZnTe)_{0,26} (CdSe)_{0,74}$ and $(ZnTe)_{0,68} (CdSe)_{0,32}$.

Keywords: solid solutions, chemical composition, acid-base properties of the surface.

**I. A. Kirovskaya, M. V. Vasina, A. V. Yuryeva, M. E. Shalaeva, E. N. Eremin, Yu. I. Matyash, S. A. Korneev**
**X-raygraphic, electronmicroscopic and spectroscopic semiconductor research system ZnTe–CdSe**

Submitted radiographic, electron microscope, Raman and Auger spectroscopy studies of binary compounds ZnTe, CdSe and substitutional solid solutions $(ZnTe)_x (CdSe)_{1-x}$, obtained by isothermal diffusion. The result clearly demonstrated the formation of substitutional solid solutions in the system ZnTe – CdSe at specified compositions defined crystallographic lattices characteristics, X-ray density, average size and distribution of particle size, polydispersity index, the elemental composition of the system components. The regularities of changes in the studied bulk physicochemical properties change in the composition, the relationship between these laws, as well as their correlation with changes in laws previously studied surface (acid-base) properties.

Keywords: semiconductors, solid solutions, structure, elemental composition, physico – chemical properties, patterns.

## MECHANICAL AND THEORETICAL ENGINEERING

**E. V. Artamonov, M. O. Chernyshov**
**Model of fracture and strength of carbide cutting element of assembled drills**

A model for the destruction of the cutting elements of the carbide tool sets for holes according to its status in the entire temperature range of metal cutting: brittle fracture, brittle-ductile, plastic, critical flow cobalt.

Keywords: destruction, strength, stress analysis, team drills, carbide cutting elements.

**P. D. Balakin, Yu. A. Bur'yan**
**System of buildup and maintain oscillation amplitude in test rig platforms**

The exact definition of inertial characteristics of complex real moving objects, as well as test objects on the performance and stability induced vibrations certain amplitude and frequency is an urgent problem to be solved with the help of test benches equipped with swing system and measuring complex. Systematics of known systems of buildup mounting platform stands as well as proposed methods of contactless excitation of the authors are the subject of this article.

Keywords: real object, stand, mounting platform, the causative agent.

**P. D. Balakin, E. A. Dyundik**
**Synthesis of chain of steering for torus automatic variator**

On the example of calculation of the main elements of the steering circuit for torus autovariator transport machine shows the algorithm for the synthesis of the formation of the target functions on management of the technical execution of the elements of the chain.

Keywords: transport machine, autovariator, the target function, eco mode, gear ratio, the elastic element.

**A. E. Eremin, E. N. Eremin, Yu. O. Filippov, A. E. Matalasova, V. S. Kats**
**Structure and properties of high chromium metal valves overlaid by serially produced welding wires**

The structure and the properties of metal overlaid with high-chromium series wires are investigated. Св-20Х13 wire showing the best testing results is preferred. The restoration technology of sealing surface of valves is recommended.

Keywords: valves, welding of sealing surfaces, high-alloyed wire, hardness, structure

**E. N. Eremin, Yu. O. Filippov, A. E. Eremin, G. N. Minnekhanov**
**Transformation of strengthening γ′-phase in heat-resisting alloy modifying**

The effect of complex modifying on heat resistance of alloy of ZhS type is investigated. It is specially noted that in modifying the morphology and topography of strengthening γ-phase is improved, diffusion permeability of grain boundaries is reduced so that structural stability and long-term toughness of alloy are increased.

Keywords: heat-resisting nickel alloy, modifying, characteristics, structure, morphology and topography, strengthening phases.

**S. V. Korneev, A. P. Serkov**
**Assessment of the reliability of forecasting of period of oil change in engines**

The methodology to assess the quality of motor oils with the use of digital chromatograms on the parameters of the distribution density of pixels that allows you to switch to a more accurate and objective assessment of motor oil compared with the method of «drop test».

Keywords: motor, engine oil, forecasting, operating time.

**P. A. Lisin, D. B. Martemianov**
**The methodology of evaluation of fractional degree of purification in cyclone devices**

Development of methods of calculation of parameters of particles of dried milk to assess the effectiveness of the process of dust particles of dry skim milk in cyclone devices spray drying plant VRA-4 is done.

Keywords: cyclone, cleaning, air flow, the particle.

**S. A. Makeev, D. M. Kolmakov**
**Residual stress in arch thin wall rolled metal of trapezoid form**

The method of calculation and evaluation of residual stress in arch thin wall rolled metal and technical radiuses is proposed.

Keywords: residual stress, residual radius, technical radius, arch covers from metal profiled sheet

**V. G. Tsiss, M. Yu. Sergaeva, A. A. Sergaev**
**Modeling air-tight chamber stress-strain state of vibration isolating branch pipe for pipe-line systems in ANSYS**

There is considered the task of finite-element modeling for stress-strain state of the air-tight chamber for the vibration isolating branch pipe of the pipe-line systems. The solution of the problem is carried out on the base of the software application ANSYS.

Keywords: stress-strain state, modeling, finite-element analysis.

**D. I. Cherniavskiy, D. D. Cherniavskaya**
**Calculation of shock recovery system consisting of three or more material points**

The article deals with the calculation of shock interaction in a system consisting of three or more bodies, which can be reduced to material points. The recovery factor equation proposed by Newton allows to calculate the simultaneous attack only two bodies. The method of calculation, which allows to determine the coefficient of restitution, while there is an impact of several material points. The paper discusses examples of the use of this methodology, including an example of a cloud chamber.

Keywords: coefficient of restitution, hit three particles, the transmission coefficient of kinetic energy.

**D. I. Cherniavskiy, D. D. Cherniavskaya**
**Efficiency of shock reducer**

The article explains the relevance of the use of value called «mechanical energy pulse». The physical meaning of this value characterizes the efficiency of the energy state of the body changes. If a physical object is a source of energy, which is converted into its mechanical motion, the magnitude of the pulse energy should strive for maximum. Conversely, if the main aim is an economical use of energy, the energy value of the pulse should be as short as possible.
The paper discusses examples of pulse energy to determine the effectiveness of pulsed shock reducers.

Keywords: energy, mechanical momentum, impact, shock pulse reducer.

**O. V. Balagin, D. V. Balagin, R. Yu Yakushin**
**Modeling process of heat allocations in high pressure pipeline of diesel engines fuel equipment**

The article is devoted to modeling process of heat allocations in the pipeline of a high pressure diesel engines fuel equipment and to establishment of functional dependence between technical condition of fuel equipment and temperature of the external surface of high pressure fuel pipeline.

Keywords: heat pattern, fuel equipment, fuel injectors, fuel pump of a high pressure, pipeline of a high pressure, modeling.

**V. D. Belitskiy, A. V. Katunin**
**The analysis of roadway asphalt pavement by means of thermodynamics**

Results of the analysis of change of asphalt concrete pavement by means of use of the device of thermodynamics are presented.

Keywords: material of asphalt concrete pavement, entropy variation, compaction process, asphalt concrete mix, compactibility exponent.

**A. G. Koltsov**
**The method of development of mathematical model of machining precision taking into account of geometric, kinematic and dynamic factors**

Problems of development of model of machining precision are considered using geometric, kinematic and dynamic factors. The basis of a mathematical model is based on the method of coordinate systems with deformed bonds; drawn graph ties coordinate systems in which the vertices of the coordinate system are built on the primary and secondary nodes machine surfaces, edges are the transition matrix from one coordinate system to another. With the help of mathematical models is possible to solve optimization problems by improving the accuracy of processing.
Keywords: precision machining, machine decomposition, the method of coordinate systems; deformable connection.

**A. G. Koltsov, V. S. Samoilov**
**Methods of error compensation in CNC**

This article describes the nature of the errors of machine tools. There are considered indicators of the accuracy of machine tools, specific ways to increase the accuracy of machine tools. Methods are described for error compensation applying diagnostic equipment. There are designated prerequisites for the establishment of a mathematical model of the machine for effective compensation of thermal errors.

Keywords: error compensation, thermal and elastic deformations, diagnostics.

**Yu. A. Kraus, M. O. Myznikov, P. O. Kropotin**
**Reduction of oil pumped and time of pipeline emptying due to changes in procedure for air valves opening**

The technology of oil pipeline emptying before repairing works reduces the capacity of pumped oil as well as the time of this operation. The positive effect is achieved by changing the order of air valve opening. This article presents the formulas for estimating the amount of volume released.

Keywords: The technology emptying oil pipeline, reduction of volume release.

**O. V. Kropotin**
**The influence of PTFE-composite linear viscoelasticity on contact interaction parameters in sealing device**

There is described the influence of linear viscoelasticity of a nanocomposite based on polytetrafluoroethylene on the parameters of contact interaction of sealing element and contact surface in the sealing device.

Keywords: linear viscoelasticity, seal, contact interaction.

**D. A. Negrov, E. N. Eremin, B. Yu. Putintsev, O. A. Peredelskaya, A. E. Matalasova**
**The effect of ultrasound impact on mechanical properties of polytetrafluoroethylene modified by Boron Nitride**

The influence of ultrasonic vibrations on the mechanical properties of polytetrafluoroethylene modified by Boron Nitride is considered. It is shown, that introduction of ultrasonic vibrations into the pressed material leads to increasing tensile strength and modulus of elasticity and elongation reduction of synthesized composite.

Keywords: polymer composite, polytetrafluoroethylene, mechanical properties, ultrasonic vibrations, Boron Nitride, modification.

**S. V. Petrochenko, A. A. Fedorov**
**The quality increasing technology of direct current machines commutator working face under its mechanical treatment**

In the article the quality increasing technology of direct current machines commutator working face under its mechanical treatment which included collector turning operation and commutator bars surface hardening by the shock-acoustic treatment method are presented. The application of repair technology for direct current machine commutator mod. 2PN100 is considered.

Keywords: direct current machine, commutator, shock-acoustic treatment.

**N. N. Chigrik**
**Study of influence of fit, component functional tolerance on longevity and fidelity of assembly of fixed links of parts of cylinder-piston group of automobile motor engine 3M3-511.10. Part 2**

By results of conducting a metrology expert examination of engineering documentation, the studies of conditions of referencing at exploitation and norms of fidelity on assembly of the connecting rod with parts of cylinder-piston group of automobile motor engine 3M3-511.10 are established outgoing from a rational proportion till the GOST 24643-81 values of tolerances of the shape and location on openings in piston and connecting-rod crossheads and on a cocking of fulcrums of data of openings concerning their positional relationship, the functional connection of definition of an angle of a cocking of the cylinder piston concerning an internal cylindrical surface of a cylinder face in a plain of a pivot center of a crankshaft is maneuvered.

Keywords: tolerance, inaccuracy, fidelity, deflection of the shape, deflection of a location of surfaces, dimensional circuit.

**N. N. Chigrik**
**Estimation of fidelity of results measurings of boundary values of height of piston rings of a model series ZMZ-402, 406, 511, 513, 5234 and GAZ-24. Part 1**

Based on the results of measurements boundary values of the height of the piston compression rings by micrometer level MP 25 to the GOST 4381-81 in justifying according rightness of his selection as a universal means of measuring by the GOST 8.051-81 and RD 50-98-86, of implementation of the boundary conditions for two-way probability $P\left(\left(\chi^2 > \chi^2_{\frac{\alpha}{2}}\right)\mathbf{U}\left(\chi^2 < \chi^2_{1-\frac{\alpha}{2}}\right)\right) = \alpha$ Person criterion at verification of hypothesis about belonging of selection totality assessment of the random variable $x \in N(\overline{x}, \sigma)$ and its point ratings according to the law of Gauss to GOST 8.207-76 established, that the probability inaccuracy reject of products is 2 %, what testifies to an abatement of tolerance of the size by height of the piston rings concerning his limiting deflations on value of probability magnitude of an output of the size for limiting deflections of a field of tolerance (c) of abnormally adopted parts and assigning to the IT6 taking into account of preferability of selection of fits to the GOST 25346-89 and GOST 25347-82 limiting deflections of tolerance of the size 2g6 at the height of piston compression rings.

Keywords: inaccuracy of result measuring, mean of measuring, exactness, control, unity of measuring, method of measuring

**S. V. Kolmakov**
**Power analysis of the friction-gears planetary transmission**

The possibility of simplifying the construction planetary gear without carrier by substituting the teeth driving link in the on the friction pair is considered in the article. There are proposed two constructions of frictional-gears planetary transmission. The working capacity of new mechanisms is confirmed by their power calculation.

Keywords: frictional gear, planetary gear without carrier, reduction ratio, traction ratio, power analysis.

**V. G. Martynov, V. B. Masyagin**
**Application of Petri network for modeling of process control of assembly production**

When developing technological process of product assembly, the analysis of all factors influencing production including possibility of mating at the time of technological processes, which conducts in parallel on the same workplaces, is carried out. For descriptive reasons and subsequent automati?n construction and use of mathematical model of the production site in the form of Petri networks is offered. The purpose of this article is development of adequate mathematical model of an assembly site for operational management of working hours.

Keywords: mathematical modeling, Petri network.

**Yu. E. Merkusheva**
**Culculation of schemes of steering hydraulic system**

Turning the building and road machines is due to hydraulic steering system, which includes all the elements between the operator and turning wheels. The article highlights the steps required to produce a mathematical model of hydraulic steering system, in particular the preparation of the design scheme and a block - diagram of the hydraulic system.

Keywords: hydraulic steering system, the mathematical model of hydraulic schematic diagram of the hydraulic steering system, the design scheme of hydraulic steering system, the flow of hydraulic steering.

**V. V. Trifonov**
**Research and development of overaluminizing technology on turbine blades**

The article describes an experiment on development of overaluminizing technology on the example of working blades of 1st and 2nd turbine

stages having a considerable time of operation. There is made the estimation of the layer condition throughout the experience and common conclusions on some peculiarities of repair.

Keywords: diffusion, aluminizing, experiment.

**V. V. Trifonov**
**Physical basis of overaluminizing on blades of turbine**

The article considers problems of ensuring the turbine blades reliability and durability on the GTE. There is identified the shortcomings of technology of repair aluminizing coverage. On the basis of the existing points of view on the mechanisms of diffusion processes, and GTE principles of work-proposed the technology of overaluminizing blades without removing the residue coverage.

Keywords: aluminizing, technology, diffusion, turbine blades.

**A. E. Shirokov, V. G. Shtele**
**Experimental determination of factor of friction in metal forming**

The paper proposes a new scheme for the contact friction with the use of computer simulation. There is increased sensitivity of the flow sheet relating to previous schemes that improves the accuracy of conducting physical experiments and obtaining information about the factor of friction.

Keywords: factor of friction, stamping, simulation.

**L. N. Akhtulova, A. L. Akhtulov, O. M. Kirasirov, V. A. Mashonskiy**
**Visual modeling of double-girder overhead crane as complicated dynamic system**

The article deals with the dynamics of double-girder overhead cranes and suggests simulation model created in the subsystem Simmechanics of software package Matlab.

Keywords: overhead crane, dynamics, Simmechanics, simulation model, Visual modeling

**A. P. Shevchenko, M. A. Begunov**
**Pilot study of work of a two-lower case keeled trencher for crops of flax seeds**

The article is devoted to research of process of crops of seeds of flax by a two-lower case keeled trencher with application of planned experiment. The rational design and technological characteristics of the two-lower case keeled trencher increasing quality of flax seed planting of seeds on preset depth are revealed.

Keywords: crops, keeled trencher.

## ELECTRICAL AND POWER ENGINEERING

**V. R. Vedruchenko, N. V. Zhdanov, E. S. Lazarev**
**About the influence of combustion chamber type on working process of diesel engines using alternative fuels**

Classification of alternative fuels for vehicles and stationary diesel power plants is done. The features of the use of alternative fuels in diesel engines are analyzed and ways of technical realization of such events is shown. The analysis of the impact of different types of mixing due to the shape of the combustion chamber in diesel engines for various purposes on the performance engines is performed.

Keywords: alternative fuel, diesel combustion chamber, mixing, a work-flow engine, exhaust gas toxicity, economic efficiency.

**V. K. Fedorov**
**The concept of entropy in the theoretical analysis of spatio-temporal self-organization distributed active media and sustainable systems of dissipative structures**

A complex electronic system with positive feedback for the experimental verification of the principle of sustainable imbalance in the nonequilibrium energy, electric and electronic systems is created. The modes of the complex electronic system operation, including modes of deterministic chaos and modes of a chaotic self-oscillations synchronization as a factor of self-organization are studied.

Keywords: electric power, electrical and electronic systems, the principle of sustainable imbalance, positive feedback, chaos, self-organization.

**V. P. Beloglazov, L. V. Beloglazova, E. V. Neupokoeva**
**The influence of output parameters at the efficiency of Ekibastuz coal ash collection in inertial-vacuum ash-collector**

This article is about the research aimed at increasing the efficiency of inertial-vacuum ash-collector. The aim of this research is the investigating the influence of the output parameters on collection efficiency of ashes. The experiment is done by narrowing of output canal by slabs.

Keywords: inertial-vacuum ash-collector, ash, speed, aerodynamics, dispersed flow.

**N. P. Badalyan, Yu. V. Molokin, E. A. Chashchin**
**The task of correction of established regime of power system by method of decomposition**

The method of calculation of an electrical power system in a steady-state operation mode is developed. In this method the mathematical model is realized by combination of Tellengen theorem and decomposition. This decreases machining time for solution of the problem when steady-state mode is corrected.

Keywords: electrical power system, mathematic model, steady-state mode.

## INFORMATION TECHNOLOGY

**V. A. Badryzlov**
**Identification and calibration of graphs of multicoupling social networks**

Questions of identification of fragment of the social network Twitter and creation of models which have identical distribution of the degrees are considered.

Keywords: random graph, large network structures, model

**O. V. Sviridenko, G. M. Androsova, I. G. Brailov, Yu. R. Preis**
**Design of rational layouts on fur sheepskin using the theory of predicates**

The research directed on the increase of efficiency of the process of designing of products from sheepskin by improving its most complicated and time-consuming stage of cutting of semi-finished products. There are identified and classified the requirements for the design layouts. The use of the theory of predicates it is made possible to present the requirements in the form of a number of limitations. There is developed algorithm of the process of rational design layouts on fur sheepskins.

Keywords: fur sheepskin, the requirements for layout, a rational layout, the cutting process, predicate, algorithm.

**L. A. Odintsova, G. M. Androsova**
**Development of methodology for designing complex geometric layouts dense (matrix) elements on fur**

The article examines the rational use of fur semis. The technique of placing complex geometrical elements on the wastes when cutting the main products is developed. There is designed flowchart dense layout design of predetermined number of matrix elements are topographical plots prefabricated.

Keywords: fur prefabricated, complex geometrical (matrix) element, dense layout, topographical plot, algorithm, flowchart.

**K. A. Koroleva**
**Recovering of missing values of signal during calibration process of measuring systems**

The paper treats the algorithm of polynomial interpolation for analog-to-digital converter with 1 ms duration of calibration. An example of reconstruction of missing values specified accuracy of processing the input signal is presented.

Keywords: calibration, ADC interpolation.

## RADIO ENGINEERING AND COMMUNICATION

**V. P. Kismereshkin, A. V. Kolesnikov**
**A possibility of application of small-sized magnetic antennas for surface wave radio communications**

There is a problem of reducing the electrical sizes of the antennas. One solution is the use of magnetic antennas with coaxial loops. The paper reads that impedance transformation in such antennas is possible. Radiating co-axials achieve high efficiency and efficient medium waves communications.

Keywords: magnetic loop, effective height, quality, medium waves communications.

**V. A. Maistrenko, V. V. Maistrenko, V. P. Pivovarov, A. V. Zubar, K.V. Kaikov**
**Developing efficient algorithms for restoration of distorted images of optoelectronic stereo ranging**

Methods of restoration of distorted images are considered and algorithms recovering images distorted at the expense of movement of objects

relatively each other are developed. Mathematical models of appropriate noise generators and distortions are developed for carrying out simulation modeling. During simulation modeling by means of a mathematical application MATLAB results of restoration of the blurred and noisy image allowing to draw an output about suitability of them for later processing in optical-electronic system of determination of range are obtained.

Keywords: spatial filtering, the frequency filtering, Lewis-Richardson's algorithm, noise generator.

**V. S. Budyak, D. V. Sidorov, T. B. Klimenko**
**Electromagnetic situation of automatic modular radiocommunication nodes**

This article presents the results of short-wave automated radio communication module ща electromagnetic situation estimation.

Keywords: smart radio systems, cognitive radio complex, software-defined radio, electromagnetic situation.

**G. M. Sidelnikov, A. S. Sinyavskaya**
**Intersymbol interference of signal PSK and DPSK for discrete channels**

This paper considers vector representation of intersymbol interference in discontinuos channels. There is obtained analytic expression of intersymbol interference that
makes it possible to compare PSK and DPSK. Integral function of probability error is calculated for double-ray channel.

Keyword: intersymbol interference, integral function of probability error, PSK, DPSK , additional phase shift.

**I. V. Veremeyev, V. A. Arzhanov**
**Basic ways of development of modern tunable and switchable radio frequency SAW filters**

The review of basic ways of development of tunable radio frequency (RF) surface acoustic wave (SAW) filters is presented in front-end modern communication systems. Strengths and weaknesses of modern switchable and tunable SAW filters are considered.

Keywords: tunable filter, microacoustics, SAW technology.

**PUBLISHUNG. POLYGRAPHY**

**S. N. Litunov, O. A. Timoshchenko, E. N. Gusak**
**Modeling of flow of ink in inking unit of offset machine with passive activator**

To improve the mixing of ink there is proposed a passive activator, which is the rod of circular cross-section, located in the inking unit of offset machine parallel to the axis of cylinder. The model of the flow of ink in the area between the rod and cylinder is developed based on the model of non-viscous liquid. The mathematical model is constructed using the theory of conformal mappings and allows assess the ink flow visually.

Keywords: ideal liquid, inking unit, passive activator, mixing ink, printing machine.

**I. A. Sysuev, A. Yu. Zakharov, E. N. Gusak**
**Special features of the page-proofs of scientific magazines (on the example of journal «Omsk scientific bulletin»)**

The questions related to the modern technologies of the production of such specific products of printing industry as printed publications especially magazines are regarded in the article. Their peculiarity is considered to be in preprinting preparation which is made with the help of the author electronic version of the article, that causes the necessity of their typographic editing alongside with the process of page-proofs itself. The groups of difficulty of typographic editing and creating charts and formula are set, complexity of technological processes of preprinting preparation is found, the comparative analysis of complexity calculations of print-proofs and existed norms is made. Standard time for creating scientific magazines on the basis of the necessity of typographic editing of author materials taking into account their group of difficulty is set.

Keywords: scientific publications, preprinting preparation, print-proofs, typographic editing, groups of difficulty of typographic editing and print-proofs, standard time.


МИНИСТЕРСТВО ОБРАЗОВАНИЯ И НАУКИ РФ
ПРАВИТЕЛЬСТВО ОМСКОЙ ОБЛАСТИ
ОМСКИЙ ГОСУДАРСТВЕННЫЙ ТЕХНИЧЕСКИЙ УНИВЕРСИТЕТ
ОМСКИЙ НАУЧНЫЙ ЦЕНТР СО РАН
ОМСКИЙ НАУЧНО-ОБРАЗОВАТЕЛЬНЫЙ КОМПЛЕКС
ИНСТИТУТ ПРОБЛЕМ ПЕРЕРАБОТКИ УГЛЕВОДОРОДОВ СО РАН
ОМСКИЙ ФИЛИАЛ ИНСТИТУТА МАТЕМАТИКИ ИМ. С. Л. СОБОЛЕВА СО РАН

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Секция 4. Приборостроение, информационно-измерительные процессы, технологии и системы
Секция 5. Динамика тепловых и низкотемпературных процессов
Секция 6. Динамика летательных аппаратов. Транспортные и космические системы
Секция 7. Технология производства машин
Секция 8. Материалы и технологии. Нанотехнологии и наноматериалы
Секция 9. Математическое моделирование и исследование операций
Секция 10. Физико-химические и экологические системы, механизмы и устройства
Секция 11. Радиотехнические системы, устройства и СВЧ-технологии, информационно-телекоммуникационные системы и безопасность
Секция 12. Техносферная безопасность
Секция 13. Социальные системы: детерминация и взаимодействие
Подсекция. Динамика социально-экономических систем. Экономика инноваций, кластерная политика
Подсекция. Человек в современном коммуникативном пространстве
Подсекция. Социальная работа как фактор устойчивого развития социальных систем
Подсекция. Терминология как средство передачи информации. Динамика систем описания и преподавания иностранных языков. Научный перевод.
Подсекция. Библиотека в системе информационного обеспечения образования и науки
Секция 14. Системы вооружения и военной техники, информационные технологии в военном образовании
Подсекция. Динамика систем вооружения и военной техники
Подсекция. Динамика профессиональной подготовки военных специалистов
Секция 15. Живые системы

**Представление докладов**

Желающие принять участие в работе конференции должны в срок **до 16 мая 2014 года** направить следующие материалы:
— заявку на участие в конференции (образец на ipo.omgtu.ru);
— печатный и электронный варианты доклада, оформленные в соответствии с требованиями (образец на ipo.omgtu.ru);
— экспертное заключение о возможности открытого опубликования;
— копию финансового документа об оплате оргвзноса.

**Организационный взнос**

Оргвзнос составляет 690 рублей (включая НДС).
При перечислении оргвзноса нужно указать следующие платежные реквизиты: ИНН 5502013556 УФК по Омской области (ОмГТУ, л/с 20526Х06430) КПП 550101001, ОКАТО 52401380000, ОКТМО 52701000; р/с 40501810500002000483 в ГРКЦ ГУ Банка России по Омской области г. Омск, БИК 045209001, ОКОНХ 92110, ОКПО 02068999 (в назначении платежа обязательно указать код — 00000000000000000130) **с пометкой «Оргвзнос за участие в конференции «Динамика» (указать Ф. И. О. участника»).**

Адрес оргкомитета:
644050, г. Омск, пр. Мира, 11, ОмГТУ, Информационно-патентный отдел
Телефон/Факс (3812) 65-35-36
E-mail: conf@omgtu.ru