

**ABSTRACTS**  
**Radioelektronika i informatika. 2004. № 1**

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UDC 621.371.3

**Electromagnetic waves scattering on the grate of the resonant magnetodielectric spheres with the anisotropic topological structure determination the arifmetical progress** / A.I.Kozar // Radioelektronika i informatika. 2004. № 1. P. 4-8.

Solution of the problem on electromagnetic waves scattering on regular spatial lattice of resonant spheres were considered. The expressions for the scattered field were derived.

Fig. 3. Ref.: 5 items.

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UDC 514.14:621.391

**Application cycloid of function for synthesis fractal of signals** / R.E.Paschenko, U.P.Ykovishen // Radioelektronika i informatika. 2004. № 1. P. 9-13.

On the basis of use of properties cycloid the opportunity of reception fractal not differentiation of function is shown which allows to synthesize fractal a signal. The unequivocal functional communication(connection) between fractal by functions received on a basis cycloid and sinesoid is established. Is shown, that the change of space of parameters base cycloid allows to change dimension synthesized fractal of a signal.

Fig. 11. Ref.: 12 items.

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UDC 621.396.96

**Application of the radiometric equipment for efficient synchronization of the time and frequencies standards in a zone of direct visibility** / Yu.O.Koval, S.G.Kundyukov, O.B.Lutsenko, V.V.Bavykina, O.O.Tkachuk // Radioelektronika i informatika. 2004. № 1. P. 14-19.

Features of structure and principle of work of the radiometric equipment for time and frequencies scales synchronization and the simulators of a meteoric radiochannel are considered. It is shown, that such equipment can be used for synchronization of time and frequency scales in a zone of direct visibility with mirror-relaying algorithm application. The description of experiment is given and the received results that confirm the made conclusions are considered.

Tab. 2. Fig. 9. Ref.: 4 items.

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UDC 621.396.962

**Algorithm of digital existential processing of signals the m-element ring aerial of a lattice with weight processing** / A.N.Zajchenko, A.P.Vereshchak, A.B.Danilin // Radioelektronika i informatika. 2004. № 1. P. 20-23.

The algorithm of digital spatially temporarily processing of a broadband signal of the unknown form is considered. The algorithm of digital spatially temporarily processing of signals by the m-element ring array of a lattice with weight processing is offered, properties of some windows are investigated, results of modeling are resulted.

Tab. 1. Fig. 4. Ref.: 9 items.

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UDC 621. 396.96 + 519.2

**A priori tree of the decisions of the identification task for system of the independent radars** / Yu. A. Sirotin // *Radioelektronika i informatika*. 2004. № 1. P. 23-27.

On space of the hypotheses of the identification task for multiradar systems is built a priori tree of the decisions. The solving tree can be used for directed searching of the hypotheses in optimum and quasi optimum algorithms.

Fig. 1. Ref.: 5 items.

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UDC 621. 365

**The melt control in automated system of silicone monocrystals grown by Chohralsky's method** / A.P. Oksanich, V.I. Mikhalchuk // *Radioelektronika i informatika*. 2004. № 1. P. 28-31.

The brief analysis of conditions of heat exchange between crystal and growing vessel environment and analysis of the melt temperature control methods are conducted. The method of the melt temperature control of silicon is offered, the basic interrelations and block diagram of the temperature control subsystem are given.

Fig. 1. Ref.: 9 items.

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UDC 621.382

**Appraisal diode parameters of silicon photoelectrical converters in the dark conditions** / Zh.M. Suprun, V.A. Pismenetskiy, N.I. Slipchenko // *Radioelektronika i informatika*. 2004. № 1. P. 31-34.

The basic analytic ratios of static parameters of real diode structures are given. Influence of  $R_{\Omega}$  and  $n$  on current-voltage characteristics of real p-n junctions which was carried out in virtual environment MultiSIM 2001 Pro (Electronics Workbench) has been studied.

Fig. 10. Ref.: 3 items.

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UDC 517.958:536.71

**Simulation of the diffusional processes in system with microdisk electrode** / A.S. Mazepa, A.I. Oleinick, I.B. Svir // *Radioelektronika i informatika*. 2004. № 1. P. 35-39.

In this article we describe new simulated results which were obtained due to an application of the specific conformal mapping for the spatial coordinates and non-uniform time grid at the same time for the solution of the microdisk diffusion problem. This approach gives a good accuracy of the simulated results and decreases the CPU time.

Tab. 5. Fig. 4. Ref.: 18 items.

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UDC 537.86

**The dynamic processes in conducting structures of the chips under an effect of pulsed electromagnetic fields in view of a skin-effect** // Ye.V. Grigor'ev, V.V. Starostenko, Ye.P. Taran, G.I. Churyumov // *Radioelektronika i informatika*. 2004. № 1. P. 40-43.

In the paper the features of dynamic processes taking place in the conducting structures of the chips which are under effect of pulsed electromagnetic fields in view of a skin-effect are shown. The numerical model taking into account the skin-effect and non-uniformity of the metallization on dynamics of development of electrothermal processes in chips is developed. The dependence of an attenuation of the electromagnetic field from a thickness of conducting structures of the chips is obtained. The quantitative dependences of threshold values of electric field intensity of the incident electromagnetic wave from a pulse length are established.

Fig. 6. Ref.: 5 items.

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UDC 681.2.089

**Research of errors of identification of transitive characteristics of acyclic measuring converters by method Proni** / I.P. Zakharov, M.P. Sergienko // Radioelektronika i informatika. 2004. № 1. P. 44-47.

Technique of identification of transitive characteristics of acyclic measuring converters of the any order on the basis of method Proni is considered. The analysis of errors of definition of parameters of transitive characteristics of measuring converters is executed, conditions of their minimization are found.

Tab.1. Fig. 3. Ref.: 8 items.

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UDC 681.3

**Critical control algorithms synthesis with taking into consideration environment influence** / V.A.Timofeyev // Radioelektronika i informatika. 2004. № 1. P. 48-51.

In this paper input signals spaces that are used in critical control systems synthesis are considered and analyzed. The control law structure for ARMAX-plant in spaces and are proposed.

Fig. 1. Ref.: 10 items.

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UDC 62-5:518.5

**Calculation algorithms of direct quality indexes of weight functions of automatic control systems** // V. P. Severin, E. N. Nikulina // Radioelektronika i informatika. 2004. № 1. P. 52-59.

The evaluation algorithm of weight function of automatic control systems is developed with use of matrix exponential calculation algorithm. Extremum calculation formulas of weight functions are deduced also algorithms made. Indexes of the maximal deviation and oscillation are determined on the basis of extremums. Calculation formulas of establishment time of weight function are received also algorithms constructed.

Fig. 5. Ref.: 5 items.

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UDC 519.21

**Evolution of the distribution of the particles, residing in liquids when change of their density**/ A. V. Miroshnychenko // Radioelektronika i informatika. 2004. № 1. P. 60-62.

In article is researched evolution of the particles distribution to different density, which are found in active fluid ambience. The ambience changes density of the particles. The problem reduced to question about stabilization of the Markovian process distribution on given time interval.

Ref.: 2 items.

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UDC 519.852..33

**The analytic method of the solution statistic hypothesizes tasks against some alternatives.** / H. Makogon // Radioelektronika i informatika. 2004. № 1. P. 63-65.

The use of accidental decisive rule for the solution statistic hypothesizes tasks against some alternatives is considered. It is shown that it allows reducing the possibility of the mistaken decision due to indeterminate method. It also gives the possibility to take into consideration the demands to the mistaken hypothesize adoption probability.

Ref.: 3 items.

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UDC 681.5; 535.32

**Universal experiment automated control system** / O.A.Galuza, A.I.Galuza, A.D.Kudlenko, K.A.Slatin, M.M.Smirnov // Radioelektronika i informatika. 2004. № 1. P. 66-69.

Universal experiment automated control system is suggested for experiments that do not require high operating speed. Digital voltmeter is used as measuring device and stepping motors are used as actuators. A version of the system with one measurement channel and three control channels is realized.

Tab. 1. Fig. 4. Ref.: 7 items.

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UDC 517.9

**Stochastic measure stabilization at it local perturbation**/V.A. Dikarev, I.G. Yalovega // Radioelektronika i informatika. 2004. № 1. P. 69-71.

In this article the problem of stochastic measure stabilization at it local perturbation, whether it is strong or weak. General conditions, which permit the stabilization of the system, are cited.

Ref.: 3 items.

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UDC 519.6

**System approximation and analysis of accuracy of model choice** / V.I. Gritsyuk // Radioelektronika i informatika. 2004. № 1. P. 72-73.

The criterions of approximation of complex models are considered. The investigations of criterions of solutions quality in task of the choice of variable subset in multivariable regression models is given.

Tab. 2. Ref.: 3 items.

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UDC 62.50

**Analytical researches of many communications of processes in diesel engine - generating installations** / R.P. Miguschenko, V.K. Guselnikov, O.Yu. Valuyskaya // Radioelektronika i informatika. 2004. № 1. P. 74-78.

In clause the structure of model of diesel engine - generating installation is developed, is revealed of many communications of processes in a working zone, the algorithm of indemnification is synthesized.

Fig. 2. Ref.: 7 items.

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UDC 681.3

**Medical computer-aided information system** / I.Sh. Nevludov, T.I. Getmanskaya, E.I. Litvinova, S.G. Karpenko, V.S. Gorbun // Radioelektronika i informatika. 2004. № 1. P. 78-84.

Application of structural analysis methods when engineering of medical computer-aided information system allowed defining functions of it, to show interaction of system basic components between itself and external entities, to construct global data model in entity-relationship diagram form, which may be represented in any data base system.

Fig. 10. Ref.: 4 items.

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UDC 681.3+681.5:007

**Parallel-serial algorithms of search of point with attribute, which are noise immunity to symmetrical no regular virtual sequences** / N.V. Alipov, I.N. Alipov, N.M. Korablev, L.N. Rebezyuk // Radioelektronika i informatika. 2004. № 1. P. 85-92.

The bases of synthesis of parallel-consecutive algorithms noiseproof of search of the point with a characteristic attribute to two-polar (symmetrical) virtual sequences are described, where only interval of time between two next emissions a random value.

Ref.: 8 items.

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UDC 681.32

**Trends of digital systems design on electronic technology market** / I.V. Hahanova // Radioelektronika i informatika. 2004. № 1. P. 93-100.

Review of electronic market trends for mobile digital systems and heuristic laws reflecting the modern development of microelectronics and computer technics is offered. Recommendations for scientific research activation in perspective directions connected with need of electronic technology market is given.

Fig. 2. Ref.: 24 items.

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UDC 681.325

**Probability approach to on-line testing of computing circuits for processing the approximated data** / A.V. Drozd // Radioelektronika i informatika. 2004. № 1. P. 100-102.

The question of on-line testing for computing circuits executed approximated data processing is considered. The probability approach to diagnosing the devices, raising reliability of the check of the approximated results by reduction in rejection of authentic results is offered. Estimations of decrease in a parameter of non-reliability of the results check at processing the approached data are received.

Ref: 8 items.

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UDC 681.326:519.713

**Mathematical Modelling of Parameter Fluctuations with Applications to Fault Detection in Analogue VLSI Circuits** / H. J. Kadim // Radioelektronika i informatika. 2004. № 1. P. 103-108.

The method proposed integrates design and test. It is based on analytical modelling equations to estimate the sensitivity of analogue circuits to faults and parameter variations, and determining the reliability of circuits when operating in the presence of faults. The work presented in this paper is twofold: an investigation of systems dynamics to estimate the reliability of the circuit when operating in the presence of faults; a proposed method for minimal realisation.

Tab. 1. Fig. 9. Ref.: 17 items.

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UDC 519.711.3:519.68

**Dependence of tolerance and equivalence relations in metatext informational and analytical systems** / A.M. Luganskiy, V.P. Mashtalir, V.V. Shlyakhov // Radioelektronika i informatika. 2004. № 1. P. 109-112.

Problems of metatext constructions intercoupling simulation in interactive information systems are considered. The attention is focused on transformation of tolerance relations combinations to equivalence. Necessary and sufficient conditions of an equivalence relation producing by means of arbitrary number of tolerance relations intersection have been formulated and proved.

Tab. 1. Fig. 1. Ref.: 12 items.

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UDC 621.391:51.142

**Theorems of some integrated identities on the basis of series summation method in HSRK** / S.V.Chumachenko // Radioelektronika i informatika. 2004. № 1. P. 113-115.

The approach to series summation in Gilbert space with reproducing kernel is developed. By the proof of the theorems having theoretical and practical value new results for integrated identities are deduced.

Ref.: 6 items.

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UDC 681.3

**Automated system of ultrasonic images processing for desicion making** / V.G. Adamov, M.V. Privalov // Radioelektronika i informatika. 2004. № 1. P. 116-119.

This paper describes development of ultrasonic images processing for decision making system. Analysis of discovering pathologies methods by texture of ultrasonic images of internal bodies was given. Described development of decision block task for automated system. Created structure of such system. Has shown that this system must be run by doctor and last word when discovering pathology belongs to him. Structure of decision block was developed and its work alorythm was generalized. Added some recommendations for this system realization.

Tab. 1. Fig. 2. Ref.: 7 items.

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UDC 615.47:616-072

**Wireless telemeter system of suppression epileptic activity with using of BLUETOOTH technology** / D.S. Bey, V.I. Chumakov // Radioelektronika i informatika. 2004. № 1. P. 119-122.

Opportunities of use of small-sized biotelemeter system are considered on the basis of integrated technology BLUETOOTH in neurophysiology for analysis EEG and suppression of epileptic attacks.

Fig. 4. Ref.: 6 items.

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UDC 658.5

**The Numerical modeling of the influence of the technical object on condition of the water object.** / I.S. Muravyova, S.I. Chaynikov // Radioelektronika i informatika. 2004. № 1. P. 122-125.

The mathematical statement of a task for the description of change of parameters of quality of water. The algorithm for the numerical decision of the stated task is offered. Modeling an ecological situation in water object is executed which results from emergency destruction of a dam.

Fig. 5. Ref.: 2 items.

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UDC 519.673

**Adaptive Mask for Image Edge Segmentation** / K.S. Smelyakov // Radioelektronika i informatika. 2004. № 1. P. 126-134.

Actuality of adaptive mask approach for improving the spatial differentiation methods is grounded for solving of image edge segmentation problems. On the basis of the proposed system of models, which include topological, geometrical and functional components, the segmentation criteria are specified and a model of adaptive mask is composed that allow to improve segmentation stability and to widen the processed image class relative to contrast range. For the contrast and partially contrast images it is proposed an edge segmentation method being based on this adaptive mask.

Fig. 10. Ref.: 26 items.

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UDC 615.47:617-089

**The analysis of the basic characteristics of biomechanical signals** / T.V. Nosova, V.V. Semenev, V.A.Pismeneckiy // Radioelektronika i informatika. 2004. № 1. P. 135-138.

In article is brought the spectral analysis of bio-mechanical signals, are determined technical requirements to complex of their processing. Happens to the algorithm of calculation of kinematics features of step.

Fig. 2. Ref.: 1 item.

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UDC 62-501.70

**The conception of upbuilding region sistem ecological safety lifework on base personal noticeabout out- and input environment anomalic situations** / V.M. Lagutin // Radioelektronika i informatika. 2004. № 1. P. 138-141.

The conception early person notify of population of large towns about anomalic crisis situation is derived. The sistem automatic collection and treatment information about degree risk for health person medico-ecological anomals and scheme of informing varing of category mens this information is propoused.

Fig. 1. Ref.: 5 items.

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UDC 519.713

**Developing of expert systems for designing and planing problems** / G.F. Dubko, Fudju Chalid Issa // Radioelektronika i informatika. 2004. № 1. P. 141-146.

The problems of construction Expert Systems with usage of 3-level knowledge model are affected. Knowledge base to construction of programming model on VHDL is presented. The model from component (combinational logic) is constructed.

Fig. 2. Ref.: 6 items.

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UDC 519.85

**Multicriteria step-by-step optimization of network systems** / A.A. Galuza, L.M. Lubchik, O.A. Tevjasheva // Radioelektronika i informatika. 2004. № 1. P. 147-150.

The paper deals with the problem of multicriteria optimization of complicated network systems with vector condition and control variables. The developed technique is based on dynamic programming method. In the paper various individual subsystems cases such as merging and splitting branches, one- and multidimensional systems are discussed.

Fig. 7. Ref.: 5 items.