

ABSTRACTS

Radioelektronika i informatika. 2005. № 4.

UDC 621.396.96'02

Singularities of machining of quasicontinuous signals in radioacoustic systems / V.M. Kartashov, A.Y. Burygin // Radioelektronika i informatika. 2005. № 4. P. 4-7.

Optimization of parameters of a quasicontinuous sounding signal of the radioacoustic systems, providing deriving on an input terminal of an antenna of the continuous dispelled signal is carried out. Thus dispelled oscillations will hit on an input terminal of the receiver irrespective of a position of sound premise that causes lack of "dead" bands on a route of exploration. Requirements to a system of machining and extraction of the information from a received signal are formulated. Energetic advantages which are ensured with usage of a quasicontinuous signal are shown.

Fig. 1. Ref: 5 items.

UDC 621.396:681.34

Combined bispectrum-filtering technique of signal waveform estimate with the use of adaptive filter on basis of DCT / A.A. Zelensky, V.V. Lukin, A.V. Totsky, D.V. Fevralev // Radioelektronika i informatika. 2005. № 4. P. 7-13.

In this paper, a method of combined bispectral filtering for signals processing is considered. Smoothing of complex bispectrum by an adaptive filter on basis of discrete cosine transformations (DCT) with estimation of local variance inside each block is proposed. The results of numerical simulation are presented. Advantage of this approach in comparison to both classical bispectrum processing and bispectrum-filtering using non-adaptive methods is shown.

Tab. 3. Fig. 10. Ref.: 17 items.

UDC 620.179.17

About increase of the relation signal / noise at use of a electromagnetic acoustic method of thickness measurement / I.V. Ruzhentsev, A.V. Marchenko // Radioelektronika i informatika. 2005. № 4. P. 13-16.

In article quantitative estimations of the relation signal / noise are made at various ways of processing of signals reflected from a product bottom. Application of spectral processing of autocorrelation function is proved at measurement of small thickness in conditions of significant acoustic handicapes.

Fig. 1. Ref.: 8 items.

UDC 621.396.67

Step-horn radiator with the flat impedance comb / A.A. Karpenko, Ya.I. Lepikh // Radioelektronika i informatika. 2005. № 4. P. 17-19.

In the given article the problem of reduction of width of the directional diagram (DD) stepwise horn (SH) the radiator with the help of inclusion in its design of the flat impedance comb representing ridge periodic metal structure of grooves of a rectangular cross section is decided. The method of mathematical modelling obtains the normalized amplitude directional diagrams SH with a flat impedance comb in horizontal and vertical sections.

Fig. 4. Ref.: 5 items.

UDC 517.958:535.4

Some question of modulation methods use in electromagnetics measurement of matters parameters in microwave band / A. Yu. Panchenko // Radioelektronika i informatika. 2005. № 4. P. 20-24.

Numerical investigations into results of mechanical modulation introduction into cavity meters of permittivity were performed. It was shown that modulation responses processing makes it possible to increase a volume of the information being obtained.

Fig. 5. Ref.: 4 items.

UDC 519.713

The recursive formula for the transfer matrix of a chirping mirror / S. O. Yakushev, O. V. Shulika, V. V. Lysak, I. A. Sukhoivanov // Radioelektronika i informatika. 2005. № 4. P. 25-30.

We've discussed the transfer matrix method for chirping mirrors. It has been derived expression for computation of total transfer matrix of the chirping mirror. New formula has a recursive form. It's allowed to form expression for the reflectance of chirping mirrors. It has been comparison between traditional and new method, which shown a good matching.

Fig. 5. Ref.: 13 items.

UDC 621.396.2: 621.316.2

The appraisalment of impulse response characteristic of communication channel based on a high order statistics/ V.A. Tihonov, I.V. Savchenko // Radioelektronika i informatika. 2005. № 4. P. 30-34.

The appraisalment feasibility of impulse response characteristic of communication channel over a third order moment function is considered. Equations for the coefficients discrete impulse response characteristic of channel calculation were found. Efficaciousness of proposed method for appraisalment in case of gaussian or nongaussian noise is proved. More accuration appraisalment of impulse response characteristic of communication channel provide for noise-immune equalizer of intersymbol interference synthesis.

Fig. 3. Ref.: 7 items.

UDC 519.21

Optimisation problems of synthesis of stochastic matrixes / S.V. Yakovlev // Radioelektronika i informatika. 2005. № 4. P. 35-37.

Conditions of synthesis of stochastic matrixes on system of their fragments are received. The number optimisation problems of synthesis is put and situations are resulted when exact synthesis is impossible

Fig. 1. Ref.: 5 items.

UDC 681.5

Aadaptive control by structure of complex stochastically disturbed systems on the Petri nets basis / S.A. Kachur // Radioelektronika i informatika. 2005. № 4. P. 38-41.

Universal adaptive algorithm of optimum control by structure on the Petri nets basis for no terminal and terminal control on the square-law criterion is offered. The algorithm allows to synthesis control action on the variable range for complex systems, than function under large prior uncertainty conditions.

Ref.: 10 items.

UDC 519.81

Parametric identification of additiv-multiplication models for multicriterion estimation / V.V. Beskorovainyi, I.V.Trofimenko // Radioelektronika i informatika. 2005. № 4. P. 41-46.

The application of comparatory identification technologies for determination of weighting factors of local criteria in additiv-multiplicative multifactoring estimation models is considered. The mathematical models on base of shaping the binary relations of equivalence, preferences and permissive preference as well as method of deciding the problems are suggested. Offered approach allows to reduce decide problems to problems of single-line or nonlinear programming.

Tab. 1. Ref.: 9 items.

UDC 519.7:007.2

Modified algorithms for learning vector quantization neural networks / O. Korolkova // Radioelektronika i informatika. 2005. № 4. P. 46-49.

This paper considers architecture of fuzzy self-organization map, which uses polynomial membership function, and its learning procedure based on modified T.Kohonen's algorithm LVQ2.1.

Fig.5. Ref.: 5 items.

UDC 681.324.01

The method of decision optimizations tasks based principles of auxiliary tasks and relaxations / A.Y. Sklyarov, L.A. Khristoeva // Radioelektronika i informatika. 2005. № 4. P. 49-56.

Principles of auxiliary tasks and relaxations are investigated with the purpose of their use by development of a method not centralized decisions optimizations tasks of the big dimension. Algorithmic procedures of realization of the suggested method are developed. Requirements and conditions of convergence of the suggested procedures are formulated. Recommendations on practical application of a method are given at the decision optimizations tasks of the big dimension with use of uniprocessor and multiprocessing computers.

Ref.: 17 items.

UDC 615.89:621.372

The verification of asymptotic method applicability for the description of heterogeneous multi-mode data channels / S.N. Vasiljev // Radioelektronika i informatika. 2005. № 4. P. 56-59.

The high-frequency asymptotic formula for non-homogeneous multi-mode transmission system is compared with the existing exact solutions. For the most important cases when the exact solution cannot be found the asymptotic is compared with the results of computer modeling.

Tab.8. Ref.: 5 items.

UDC 519.713:681.326

Digital circuits' modification based on method of testability analysis TADATPG / E.N. Kulak, M.A. Kaminskaya, Wade Ghribi, Hassan Ktiaman, O.O. Guz // Radioelektronika i informatika. 2005. № 4. P. 60-68.

It is proposed method of testability analysis of digital circuits for deterministic ATPG. This method is more suitable in comparison with known classical methods. It is oriented on combinational and sequential circuits and based on topological analysis on the gate level. Values of testability, which was obtained allow to easy modify given circuit for minimize number of untestable faults.

Tab. 5. Fig.12. Ref.: 22 items.

UDC 681.323

Choice of model description parameters of gas-dynamic objects in tasks of image synthesis for visualization systems / V.M.Gusyatn, V.N.Sidorov // Radioelektronika i informatika. 2005. № 4. P. 69-71.

The approach to a choice of description parameters of the gas-dynamic objects is offered, allowing to optimize algorithm of gas-dynamic object modeling from the point of view of computing resources and speed of one algorithm iteration. In article results of mathematical modeling of two different nature gas-dynamic objects which prove criteria of optimization of a model parameters choice of the gas-dynamic objects description are resulted. Results can be used in the development of real time visualization systems for aircraft and space simulators.

Fig. 3. Ref.: 6 items.

UDC 681.324

Selection of LAN parameters of a real time system / V.V.Yeliseyev // Radioelektronika i informatika. 2005. № 4. P. 71-78.

The paper gives comparative analysis of service rules in a bus organized structure LAN according to the suggested quality criterion. Dependences of LAN effective productivity and readiness from system parameters are received. The technique of selection of a real time system LAN nominal throughput is given.

Tab. 5. Fig. 4. Ref.: 7 items.

UDC 519.713: 681.326

Diagnostic Expert Systems of Computer Networks / V.M. Soloviev, J.V. Koldobanov // Radioelektronika i informatika. 2005. № 4. P. 78-84.

In article questions of reception of the information on a technical status of the heterogeneous computer network and its use are considered at construction of diagnostic expert systems (DES). Results of article can be used at construction of network diagnostic systems.

Tabl. 1. Fig. 3. Ref.: 3 items.

UDC 621.391

Random sequences determination, distinguished by distribution transfer, on the basis of the rank statistics / A.V. Omelchenko // Radioelektronika i informatika. 2005. № 4. P. 85-89.

Rank decision rules of random sequences determination have been built, distinguished by distribution transfer, on the basis of the rank statistics. A variant of the rank decision rule of determination on the basis of Whitney's statistic has been proposed. Analytic formula for calculation of two random sequences determination probability has been drawn with the help of rank decision rule and the characteristics of the cultivated algorithm have been investigated.

Tab. 1. Fig. 3. Ref.: 6 items.

UDC 681.51.007

Comparative analysis of morphological normalization methods / A.S. Yegorov, S.V. Mashtalir // Radioelektronika i informatika. 2005. № 4. P. 90-95.

On the basis of mathematical morphology searching methods of sets affine-equivalent (salient) points of binary images are considered in view of discrete representation of the entrance data. By means of the statistical analysis it is proved, that offered the searching methods of external and internal salient points can be effectively used for the decision of a normalization.

Fig. 5. Ref.: 17 items.

UDC 621.391

Renewal of binary polyadycal numbers with the limited amount of series of units / V.V. Barannik, A.K. Yudin // Radioelektronika i informatika. 2005. № 4. P. 95-102.

Renewal of binary data arrays on the basis of decoding of structural code constructions on the limited amount of series of units is expounded in the article. It is proved, that renewal of information is carried out without bringing of error.

Ref.: 4 items.

UDK 004.7:004.272.44

Modified data transmission rate adaptation method based on RAP protocol / V.I. Sayenko, O.M. Snurnikov // Radioelektronika i informatika. 2005. № 4. P. 103-110.

The method of multimedia data transmission rate adaptation is purposed as a modification of RAP protocol. Instability of flows controlled by RAP in bottleneck conditions was shown using simulation model, as well as significant stability improvement, caused by applying RRAP in the same conditions.

Tab. 2. Fig. 7. Ref.: 12 items.

UDC 004.891

Realization of describer and knowledge base of expert system for planning actions of the user by development of programs / A.S. Prigozhev // Radioelektronika i informatika. 2005. № 4. P. 110-116.

In this article are considered principles of a subsystem of the help to the user of a personal computer with use of planning expert system on the basis of scripts. There is offered the structure of relational database for storage knowledge base, and also circuits of a subsystem of help at various modes of its use. Also are considered principles of functioning of a subsystem of help in these modes, and it is offered to collect statistics about carried out commands in system for which the subsystem of help is projected.

Tab. 4. Fig. 4. Ref.: 4 items.

UDC 004.942

The exploration of – semantics for predicate queries modifications / V.I. Sheketa // Radioelektronika i informatika. 2005. № 4. P. 116-122.

There is shown, that the introduced conception of – semantics for predicate query modification does have an property of truth fullness in relation to theirs declarative semantics. The introduced semantic categorical strategy is an strategy with truth. The layers of the gotten indexed category are complete structures with proper limits and colimits set through the intersection and unification of reserved left-closed pairs of arrows. The examined interpretation is characterized by the truth fullness which is preserved at application of reindexed functors. There is shown that used semantic strategies have the well founded truth and that for given modification predicate query does exist corresponding categorical deduction with calculable answer.

Ref.: 16 items.

UDC 681. 513: 519. 7

Multidimensional artificial neural sigma-pi network and its learning algorithm / Ye. V. Bodyanskiy, N. Ye. Kulishova. // Radioelektronika i informatika. 2005. № 4. P. 122-125.

The approximation problem of objects with many inputs and many outputs (MIMO) is considered. For system simulation with multidimensional input and output parameter sets multidimensional artificial neural Sigma-Pi network is offered. This networks combine the advantages of the multilayer perceptrons and radial basis function networks. Comparison with the multilayer perceptron in the chaotic process approximation problem is given.

Tab. 1. Fig.. 2. Ref.: 12 items.

UDC [519.95 + 518.5]: 622.692.4

About one method for estimation systematic mistake of the meters physical parameter stable gas condensate / A.D. Tevyashev, V.I. Luk'yanchik, K.V. Kobylinskiy, A.V. Kotelevcev // Radioelektronika i informatika. 2005. № 4. P. 126-132.

The method for statistical estimation of systematic mistakes of the stable gas condensate mass flow and density meters, located in measurement points of trunk pipeline, on base of the collections of the measurements physical parameter condensate in steady-state regims of condenser is considered. Method of the calculation dispersion of systematic mistakes of the condensate mass flow and density estimations is developed also.

Fig. 7. Ref.: 3 items.

UDC 658.012.011.56:658.512

Stochastic model and methods of answering to a problem operational planning operating mode system of electrochemical protection underground pipeline / A.D. Tevjashev, V.P. Tkachenko, O.V. Popov, L.V. Strizhak // Radioelektronika i informatika. 2005. № 4. P. 132-139.

In the article is shown a stochastic model and methods of answering to a problem operational planning operating mode system of electrochemical protection underground pipeline The stochastic methods of answering to this problem explained by influence of the random factors at the transient resistance isolation and the specific resistance ground, that influence on distribution of potential pipeline-ground.

Fig. 5. Ref.: 4 items.

UDC 389+517.958:532.5

The estimation of parameters and metrological qualification of mathematical model of gas-compressor unit / O.A. Senderov // Radioelektronika i informatika. 2005. № 4. P. 140-144.

In given article is conducted analysis of proposed mathematical model of air cooler for subject of the possibility of the conducting to greatly exact parametric identification, is motivated choice of parameters of mathematical model of air cooler and way to identifications, and is estimated accuracy of identification. The developed way to metrological qualification of mathematical model of air cooler for using them in task of the finding estimation temperatures and pressures on output of a air cooler and is approved offered way on real data.

Fig. 2. Ref.: 5 items.

UDC 519.85

The solving of unconditional problem with linear-fractional function of the purpose on general set of arrangements / O.O. Emets, O.O. Chernenko // Radioelektronika i informatika. 2005. № 4. P. 144-149.

In this article the authors have proved the criterion of optimality for unconditional problems with linear-fractional function of the purpose on general set of arrangements. With criterion of contiguity of tops and criterion of top general polyhedrom of arrangements, it allows passing from the any chosen initial top up to adjacent top, while will not be found solution.

Ref.: 17 items.

UDC 517.9

The stability of stationary conditions of the mixed culture with interaction of commensalism type / I.G. Yalovega // Radioelektronika i informatika. 2005. № 4. P. 149-153.

The mathematical model describing the production of the mixed culture, consisting of two species of populations in the throughput system is examined. The investigation of possible stationary conditions for stability with variation of velocity of the flow and concentration of the substrate is made.

Fig. 3. Ref.: 7 items.