

ABSTRACTS

Radioelektronika i informatika. 2003. № 2

UDC 621.396.62

The method of detection of dependence ARF efficiency index upon its parameters on the basis of marketing data / G.V.Alyoshin, V.P.Kotzuba // Radioelektronika i informatika. 2003. № 2. P. 4-6.

The problem of system analysis that may occur while setting and solving the problems of systems synthesis or their take-off point is considered. The results of the marketing data collection as well as their analysis and calculations are suggested. On the basis of the marketing data obtained, general methods of detection of the efficiency index of ARF-radio-receiving sets dependence as regarded on its parameter are suggested.

Tab. 1. Fig. 3. Ref.: 2 items.

UDC 517.958:537.8

Excitation of a cone surface with longitudinal slots by radial sources / V.A. Doroshenko, E.K. Semenova // Radioelektronika i informatika. 2003. № 2. P. 7-11.

A problem of excitation of a semi-infinite perfectly conducting circular cone with periodical longitudinal slots by concentrated sources is considered. Electromagnetic problem solution is reduced to solution of the first and second mathematical physics boundary problems. It's shown that the boundary problem is equivalent to solution of a linear algebraic equations system for Fourier's coefficients of electromagnetic field components. Numerical solution of the problem is obtained for arbitrary cone parameters and the analytical one is derived for narrow cone sectors and slots. Scattering patterns are given for a cone with one slot.

Fig. 5. Ref.: 7 items.

UDC 535.42:534.321.9

Acoustooptical correlator with time integration in the passive radiolocation systems / V.B. Lobyrev // Radioelektronika i informatika. 2003. № 2. P. 12-15.

The author develops mathematical model acousto-optic correlator with temporary integration permitting to study influence of parameters of researched signals and parameters acousto-optic of interaction on an output signal. The calculation of amplitude of an output signal acousto-optic correlator with temporary integration is carried out depending on a bandwidth and amplitude of the researched signals which have arrived on inputs acousto-optic correlator with temporary integration in TDOA systems of a passive radiolocation. On the basis of calculation are constructed and analyzed the dependences of amplitudes of an output signal of acousto-optic correlator with temporary integration from parameters of a researched signal.

Fig. 4. Ref.: 4 items.

UDC 621.396

The analysis of the potential precision of object's height definition in the surveillance radar stations by the partial patterns method / G.U. Dukin, N.D. Rysakov, V.I. Khokhlyk // Radioelektronika i informatika. 2003. № 2. P. 15-18.

There were defined more precisely the algorithms of the objects height definition in the surveillance radar stations by the partial diagrams method for obtaining of unbiased estimate under object's irradiation by two beams of multibeam pattern. The algorithm of height calculation under object's irradiation by the extreme (the upper or the lower) lobes is proposed. The definitions of the potential accuracy of the object's height are proposed and the conditions of its achievement are justified. The calculated expressions of the potential accuracy were received and presented.

Fig. 3. Ref.: 2 items.

UDC 621.396.967

Expansion of a range of definition of high-altitude velocity profiles of a wind in surface radar systems of remote sensing of atmosphere /O.V. Zybkov, D.A. Velichko, G.I. Sidorov // Radioelektronika i informatika. 2003. № 2. P. 18-22.

The capability of a prediction of wind speed horizontal component and its direction outside of surface radar coverage with usage of methods of forecasting with minimum mean-square error by a prediction is demonstrated. The expediency of application for forecasting with second and higher order of autoregression model is demonstrated. The experimental verification of proposed methods of forecasting is executed with usage of actual profiles of of wind speed and direction module . The necessary number of discret of series of a component of wind speed with an altitude is determined. The forecast maden at the base of these data is reliable for a requirements of automated management systems for an air traffic.

Fig. 3. Ref.: 8 items.

UDC 621.396

Possibilities of detection and support weak radar-tracking signals on a hum noise of hindering reflections from heterogeneities of a medium near a surface of ground / V.V. Zhirnov, O.G. Lebedev, V.J. Strilchenko // Radioelektronika i informatika. 2003. № 2. P. 23-25.

Detection and tracking possibility under accumulation of weak signals with heavily interference a hum noise, including hindering reflections such as "angel - echo", on an output of a receiving tract with linear peak performance has been analysed. The characteristics of detection with application of procedures of non-coherent accumulation of signals were obtained.

Fig. 1. Ref.: 5 items.

UDC 621. 396.96 + 519.2

A priori sequencing the hypothesis of the problem to identifications for independent radar / Yu. A. Sirotin // Radioelektronika i informatika. 2003. № 2. P. 26-30.

In article is stated general approach of the building of the most plausible order on outline ensemble of the hypothesises of the identification for multiradar system The proposed method of the sequencing uses only qualitative inequalities , which is provided for any radar

Ref. 3 items.

UDC 621.385.69

Electromagnetic radiation of the electronic ring moving along non-uniform waveguide structure / S.V. Chumachenko // Radioelektronika i informatika. 2003. № 2. P. 31-33.

The new analytical method based on series summation on selective values in the Hilbert space with the reproducing kernel is applied. It allows to simplify known methods of solving boundary electrodynamics tasks and to lower cost of numerical calculations that is actual and practically expedient.

Ref.: 8 items.

UDC 546.28

Management of distribution of oxygen on length of monocrystals of silicon of the big diameter growed up by Chohralskiy method / A.P. Oksanich, S.E. Pritchich // Radioelektronika i informatika. 2003. № 2. P. 34-37.

The opportunity of management by distribution of oxygen on length of a monocrystal of silicon of the big diameter, growed up by Chohralskiy' method with application of the automated control system of MANAGEMENT INFORMATION SYSTEM "Kremen" is investigated. The opportunity of reception of monocrystals of silicon of the big diameter with uniform distribution of oxygen on length monochip is shown.

Fig. 3. Ref.: 12 items.

UDC 621.382

Study on current-voltage characteristics of diodes p-n structures of varicaps/ Zh.M. Suprun, N.I. Slipchenko, V.A. Pismenetskiy // Radioelektronika i informatika. 2003. № 2. P. 37-40.

The studied of dynamic on current-voltage characteristics of varicaps with the help of increase of a capacitor component of a current in the periodic sawtooth input voltage. The calculation results obtained what allow to estimate deformation of bending dynamic around current-voltage diagrams in change of barrier capacities of p-n transitions and speed of growth of an input signal. The results of experimental of dynamic current-voltage characteristics, obtained on varicaps CV 105A with operating frequency of an input signal 1, 10 and 70 kHz to confirm obtained theoretical results are given. The analysis of errors measuring current-voltage characteristics and methods providing assigned accuracy for its representation.

Fig. 6. Ref.: 3 items.

UDC 621.391, 681.327.12

Automatic recognition of separate words and phoneme speech / I.N. Presnjakov, S.V.Omelchenko // Radioelektronika i informatika. 2003. № 2. P. 41-47.

The new algorithms of recognition of words and phonemes of speech are generated. The comparative analysis of algorithms of recognition to indications of formants with application of diverse algorithms of an estimation of indications and diverse measures of proximity on parameters of middle probability correct recognition, and also stability of algorithms to an operation of an additive Gaussian white noise and narrow-band hindrances.

Tab. 7. Fig. 8. Ref.:5 items.

UDC 681.513

Forecasting adaptive neural network with dynamic neurons-filters / Ye.V. Bodyanskiy, S.V. Popov, T.Ye. Chepenko // Radioelektronika i informatika. 2003. № 2. P. 48-51.

The use of artificial neural networks based on dynamic neurons – finite impulse response filters for real-time prediction of non-stationary time series gives promising results. This architecture has a natural ability to store previous inputs and states that provides substantial decrease of the number of parameters in comparison to traditional networks. In this paper, optimal learning algorithm for such networks is proposed.

Fig. 6. Ref.: 10 items.

UDC 519.622+519.868

The analysis of the mathematical model of non- linear electric circuit with degeneration /P.S.Kabalyants//Radioelektronika i informatika. 2003. N 2. P. 52-56.

Mathematical models of non-linear electric circuits are considered in the paper. The models contain an initial-value problem for a system of differential algebraic equations in the case when the number of equations is greater than the number of unknown functions. An existence theorem is proved.. The algorithm for the verification of the solvability of the corresponding initial-value problem is given.

Fig. 2. Ref.:6 items.

UDC 519.6

The robust estimation methods in the analysis of time series/V.I. Gritsyuk // Radioelektronika i informatika. 2003. № 2. P. 57-58.

The conditions for models set which essential for identifiability analysis are given. Multitude predictions corresponding to model description are considered. Generalized M- estimates are considered and modified algorithm of robust estimation in autoregressive model is offered.

Ref.: 5 items.

UDC 681.51.015

The dynamic plant control based on it's static model / Je.G. Kunik, A.N. Kovalenko, S.A. Lyashenko // Radioelektronika i informatika. 2003. № 2. P. 59-60.

The linear dynamic plant control task based on its static model is considered. It's shown that the losses in system are dependent from the plant's properties and desided reference signal. The formula that estimates them is obtained.

Ref.:2 items.

UDC 519.21

Sufficient conditions of stabilization of distribution of Markov process for want of local perturbations it of fragments / S.N. Gerasin, A.N. Lobas // Radioelektronika i informatika. 2003. № 2. P. 61-64.

The process of stabilization of markov system with help of local perturbation of stochastic matrix items is investigated in this article. The condition of stabilization of probability distribution existing before was widespread on more wide class of fragment system.

Fig. 2. Ref.: 7 items.

UDC 519.21

Research of properties of porous materials by reflectometry method / A.V. Miroshnychenko // Radioelektronika i informatika. 2003. № 2. P. 64-67.

In article the approach, consisting that the degree of porosity of powder material is determined by a reflectometry method is offered

Tab. 6. Ref.: 4 items.

UDC 519.21

Program module for analysis of chemical materials kinetics in animal organism / N. V. Gibkina // Radioelektronika i informatika. 2003. № 2. P. 67-71.

The program, which allows to model an metabolism of some chemical materials in the organism and to control a size of these materials in every organs and in all organism is described. Mathematical model of metabolism is construct.

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

UDC 519.713:681.326

Fault simulation and test generation for digital curcuits with boundary scan / V.I. Hahanov, K.V. Kolesnikov, A.N. Parfenty, I.V. Hahanova // Radioelektronika i informatika. 2003. № 2. P. 72-79.

The high preformance algorithms of simulation and test generation for complete digital devices are offered. It based on boundary scan technology, structure analysis, that allows to reconfigurate device models during test generation and fault simulation processing.

Tab. 1. Fig. 11. Ref.: 20 items.

UDC 518.5

The problem-oriented instrumental system pole-shell/S.V.Kurpa, A.V.Shmatko // Radioelektronika i informatika. 2003. № 2. P. 80-84.

The technique of work with the problem-oriented instrumental system POLE-SHELL on an example of nonlinear tasks of the theory of shallow shells is considered in this paper. The basic stages of modeling of such tasks on an example of test tasks are presented. The results of computing of a nonlinear task of a bending of a shallow cylindrical shell under a load uniformly distributed are given with various boundary conditions.

Tab. 1. Fig.3.Ref.:5 items.

UDC 681.324

Synthesis of a quantum network of the solutions conclusion to support decision making in a system «the officer in charge of flying - pilot - flight vehicle» / A.B. Kurenko, I.B. Sirodzha // Radioelektronika i informatika. 2003. № 2. P. 85-89.

As against known simulation of functions of a human brain by means of trained neuronc networks for decision making, in the article the quantum approach to simulation of generation of human causal opinions from sendings to corollaries is developed at a search of solutions in conditions of uncertainty.

Fig. 1. Ref.: 5 items.

UDC 681.3.04

Creation of the noise-immuned multicolor matrix barcodes / Tarasenko V.P., Dychka I.A. // Radioelektronika i informatika. 2003. № 2. P. 89-93.

Methods of the creation of barcode patterns of color matrix barcodes which are noise-immuned from distortions in one or two pattern's cells are offered. It is proposed to use the multimeaning Hamming Code for creation of the barcode patterns, noise-immuned from distortion in one pattern's cell, and multimeaning BCH-Code - for creation of the barcode patterns, noise-immuned from distortion in two pattern's cells.

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

UDC 681.01: 519.713

Variant of synthesis of the processor in system of residual classes / I.A. Furman, S.A. Koshman, V.A. Krasnobaev // Radioelektronika i informatika. 2003. № 2. P. 94-96.

The results of machine synthesis of the specialized processor of processing of the information in a nonpositional number system of residual classes are stated. The task of synthesis is decided on the basis of use of the programming language AHDL, and also program Max+plus II.

Tab. 2. Fig. 3. Ref.: 10 items.

UDC 519.81

The methodic for pointed identification models adequacy evaluation that allows to find personal preferences of decision maker / E.G.Petrov, N.S. Shilo // Radioelektronika i informatika. 2003. № 2. P. 97-103.

The methodic is considered which intended to evaluate accuracy and adequacy of different pointed identification models that allows to find decision maker preferences. Methodic use of an idea of decision makers pattern preferences. Methodic is tested and results are analyzed on example of air-condition model chousing.

Tab. 5. Ref.: 3 items.

UDC 658.512.011.56: 681.5

Method of preliminary estimate of cost of territorial distributed objects / V.V. Beskorovainyi // Radioelektronika i informatika. 2003. № 2. P. 104-107.

Worded statement of the problem for estimate subsystems optimum quantity and cost of territorial distributed systems. Offered heuristic method of deciding a problem for systems with radial-node structures. Brought results of method experimental analysis efficiency.

Tab. 1. Fig. 4. Ref.: 13 items.

UDC 681.3+681.5:007

Consecutive algorithms of search of a point with a characteristic attribute, noiseimmunity to asymmetrical irregular virtual sequences / N.V. Alipov, I.N. Alipov, L.N. Rebezyuk // Radioelektronika i informatika. 2003. № 2. P. 108-112.

The bases of synthesis of consecutive algorithms, noiseimmunity to virtual sequences are described, at which the interval of time between the next emissions is casual size. The basic parities allowing to estimate correctness of a choice this or that strategy and rule of formation of a new interval of uncertainty, and logic circuit of algorithm of search are given.

Ref.: 6 items.

UDC 621.391 + 519.81

Wired communicational network multi-factor estimation and usage effectiveness analysis / I.V. Grebennik, A.U. Khabarov // Radioelektronika i informatika. 2003. № 2. P. 112-119.

Wired communicational network characteristics are analyzed in order to use them for technical state and client service quality estimation. The set of local criterions is formulated. Aggregation methods are proposed. Integrated network usage effectiveness criterion is described.

Ref.: 7 items.

UDC 519.711.3

Development of experimental procedure for a determination of linear predicate / V.A. Babenko // Radioelektronika i informatika. 2003. № 2. P. 120-123.

Comparator identification of finite-dimensional linear processes on an example of color sight of the person develops. On the basis of the developed practical recommendations of an experimental determination of linear predicate various modes on infinite-dimensional a Hilbert space make passage to finite-dimensional space of entering signals. Passage from exposition of the entering signals given originally as function, to their exposition as finite-dimensional vectors is carried out.

Ref.: 7 items.

UDC 519.673

Model and Method for Solving of the Irregular-Form Typical Images Segmentation Problem / E.P. Putiatin, K.S. Smelyakov // Radioelektronika i informatika. 2003. № 2. P. 124-130.

The model and method are presented that are provided for solving the irregular-form typical images segmentation problem which arises on processing of the digital photos of the Earth's surface, iris, seeds, microbiological and other objects. The proposed approach is provided for increasing the efficiency of the data processing systems relative to time complexity, accuracy and cost.

Fig. 7. Ref.: 15 items.

UDC 004.65

Safety of computer systems: methods and technologies / A.N. Gvozdinsky, V.A. Filatov, L.E. Chalaya // Radioelektronika i informatika. 2003. № 2. P. 131-136.

The work is devoted to the analysis of modern models and mechanisms of safety politics realization. Stages of information security system design are offered. Classification of information systems basic security threats provided. The paper offers conceptual model of information security for system of the distributed databases and discusses distributed information resources access technology based on agent technology.

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

UDC 517.9

Computation basic dilution for reservoirs / I.S. Muravjova // Radioelektronika i informatika. 2003. № 2. P. 137-140.

The mathematical statement of a task for the description of non-stationary current and change of parameters of quality of water in a reservoir of the any form is considered. In particular, the simplified model, which is not taking into account vertical moving of water mass, is considered. The algorithm for the numerical decision of the stated task is offered.

Fig. 2. Ref.: 4 items.

UDC 389: 001.18

Technique of capacity definition of exchange funds of measurements means for metrological organs / O.O. Morozov // Radioelektronika i informatika. 2003. № 2. P. 140-142.

The task of capacity definition of exchange funds (EF) of measurements means (MM) for territorial dispersed metrological organs (MO) is considered for believe system of supply. Are formulated the direct and return task of structure definition EF of MM, the technique of their solution is defined.

Fig. 1. Ref.: 5 items.

UDC 519.95:612.018

The dynamics of glycemc level autoregulation: the delayed-effect or after effect? / S.I. Lapta // Radioelektronika i informatika. 2003. № 2. P. 143-147.

Physiologically substantial construction of the most minimal mathematical model of glycemc dynamics was constructed. It was elucideted the inertia character of the glycemc level autoregulation mechanism, representing a simple local delay-effect. The most minimal mathematical model of glycemc dynamics represents a differential-difference equation of the first order with delayed argument.

Fig. 3. Ref.: 19 items.