

ABSTRACTS
Radioelektronika i informatika. 2003. № 1

UDC 621.396

Synthesis of super-robust estimators on the basis of bootstrap / V.L. Koliadin // Radioelektronika i informatika. 2003. № 1. P. 4-6.

A class of estimators is proposed which are much more robust than the sample median in respect to anomalous errors. It is shown that adaptive choice of an estimator on the basis of bootstrap allows to carry out estimation when the sample contains 90% and more of anomalous measurements.

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

UDC 621.317.443

Measure method of axial dipole-momentum of field source/A.V. Degtyariov // Radioelektronika i informatika. 2003. № 1. P. 7-9.

With purpose to measure an axial dipole-momentum of field-source, a magnetometric method, oriented towards application of two control points (dots) at pre-set coordinates, has been obtained. Algorithm of determination of momenta for two-sensor system has been derived. Analysis of error specified by de-neutralized interference-carrier multiple-fields of higher order, has been carried out.

Fig. 2. Ref.: 4 items.

UDC 517.9+538

Excitation of the phased antenna array of complex form / S.V. Chumachenko // Radioelektronika i informatika. 2003. № 1. P. 10-14.

The alternative representations for amplitude field factors in an analytical form without series are proposed. The summation method of series in a Hilbert space with a reproducing kernel is used.

Ref.: 10 items.

UDC 537.86

The current characteristics of inhomogeneous conductive microstructures of integrated circuits at effect of electromagnetic fields / V.V. Starostenko // Radioelektronika i informatika. 2003. № 1. P. 15-17.

In paper the distributions of a current density for inhomogeneous conductive microstructure elements which are included in a chip of integrated circuits are obtained at effect of electromagnetic fields. The influence of parameters of a nonuniformity of metal films on a current value which is flowing past on metallization is detected. The relation of a threshold current density to pulse duration for microsegments of inhomogeneous structure of metallization and established influence of accumbent microstructure elements and boundary conditions on character of the given relation is obtained.

Fig. 5. Ref.: 12 items.

UDC 536.522.2

Dominance of intermediate surrounding of molten temperature measuring during silicon monocrystals growing A.P. Oksanich, V.I. Mikhalchuk // Radioelektronika i informatika. 2003. № 1. P. 18-20.

The problem of the intermediate surrounding influence on silicon melt temperature exactness measuring in technological cycle of Cz crystals growth has been analysed. Method to information preparation for determination of dynamic correlation coefficient by way receipt of reliable silicon molten temperature has been stated.

Fig. 2. Ref.: 5 items.

UDC 621.391

System basis of a tensor analysis of telecommunications networks / A.V. Lemeshko // Radioelektronika i informatika. 2003. № 1. P. 21-25.

The system basis of a tensor analysis of telecommunications networks are reviewed. The full conformity to a tensor methodology to system approach is established. The implementation of the tensor approach to problem solving on calculation of telecommunications networks is offered.

Fig. 3. Ref.: 9 items.

UDC 658.012.011.56:658.512; 620.9:662.6

Task Definition of State and Parameter Identification of Mathematical Model of Gas Transport Systems in Steady Mode and Methods of Their Decision / V.A. Adamenko, O.A. Tevjasheva // Radioelektronika i informatika. 2003. № 1. P. 26-37.

Generalized task definition of state and parameter identification of GTS in steady mode was defined in the article. It includes the method of forming equation and inequation system from supplied mathematical model of steady state of GTS and from following sets of model's variables and expressions: known, measured and being identified. The method can be used to solve a wide class of tasks of gas distribution. Principles of solving of the defined task were stated. The task of identification of pressures, temperatures, consumptions and gas component percentage was issued from generalized identification task definition and solved. It is proved by experiment that dispersion of estimations, which are gotten in result of solving identification tasks, are reduced when the level of over-defining of equation system is increased.

Tab. 1. Fig. 6. Ref.: 4 items.

UDC 658.012.011.56

Technology of the functional and providing complexes informational management systems designing / V.M. Levykin, M.V. Evlanov, A.N. Pushkaryov // Radioelektronika i informatika. 2003. № 1. P. 37-40.

In offered paper designing information management systems functional structure and providences set are determined as area of allowable decisions. On this area concrete design decisions by functional and providing parts of information management systems are determined as functional and auxiliary providing complexes. Detailed definitions of each of providing complexes are given and the composition circuit of providences kinds is specified at formation of each of providing complexes. Proceeding from these definitions, in paper the new sight on functional and providing parts creation processes are offered.

Fig. 1. Ref.: 3 items.

UDC 681.5

Invariable Identification of Two-level Signals / A. D. Polonsky // Radioelektronika i informatika. 2003. № 1. P. 41-42.

On the basis of invariable algebra of rank predicates developed before it is suggested the principal rule for effective identification of random signals under conditions of a-priori indefiniteness of coefficient of managed object transference.

Tab. 1. Ref.: 2 items.

UDC 517.9+532.5

About one approximate method for numerical studies viscous flow in multiply connected domains / M.V. Sidorov // Radioelektronika i informatika. 2003. № 1. P. 42-44.

Consider the incompressible viscous flow in multiply connected domains. According to the R-function method numerical solution for this boundary problem was build.

Ref.: 4 items.

UDC 519.673+519.3

The Galerkin's method application to the spread of additive in non-stationary stable bordering atmospherics' layer / E.I. Vykhodtsev // Radioelektronika i informatika. 2003. № 1. P. 44-46.

The abilities of application of the Galerkin's method to numerically solving the problem of additive spread inside the non-stationary stable bordering layer of atmosphere is considered. There obtained an approximation solution for some modeling approach to this problem.

Fig. 3. Ref.: 4 items.

UDC 004.45

Automatic system of calculation of currents of short circuit in town electric networks / V.A. Ogienko // Radioelektronika i informatika. 2003. № 1. P. 47-48.

The paper considers a Automatic system of calculation of currents of short circuit in town electric networks. System presents itself a shell, created on language of the high level Delphi5, which allows creating and editing already existing electric network schemes. In system marketed calculation of currents as for symmetrical, so and for asymmetrical short circuits.

Fig. 1. Ref.: 2 items.

UDC 621.3.019.3 (681.3.06)

The approaches of testable design analogue integrated circuits / S.G. Mosin // Radioelektronika i informatika. 2003. № 1. P. 49-59.

The different approaches of testable designing analogue and integrated circuits are considered. One of ways of quantitative assessment testability of analog devices is demonstrated. The review of some circuits of built-in self-test is resulted, the advantages and lacks of their usage are excreted. The features of operation of the blended test trunk IEEE1149.4 are considered.

Tab. 1. Fig. 16. Ref.: 17 items.

UDC 681.324

Synthesis of quantum models of performance of indistinct knowledge for acceptance of the approximated solutions in the special cases of control of flights / A.B. Kurenko, I.B. Sirodzha // Radioelektronika i informatika. 2003. № 1. P. 60-64.

As against known models of performance of knowledge the quantum approach basing on the conceptual basis of -knowledge as pithy, in a special way structured varied data accepting simultaneously computing operations and the inference, similarly to known frame or production models of performance of knowledge is developed. However as against known models, the k-knowledge is more universal, natural, has quality of inheriting and admit algebraic transformations together with the inference by means of vector-matrix operations.

Ref.: 6 items.

UDC 681.51+192:681.3.06

The model of events of doubled systems with temporal and version redundancy at multiple and pair defects of hardware-software means / V.S.Kharchenko and O.V. Shurygin // Radioelektronika i informatika. 2003. № 1. P. 65-69.

The events bound with multiple and pair defects software and hardware in the dual frames of I&C systems are modeled of a not having built-in monitoring facilities of channels in which one is applied combined structural (hardware), temporary and version redundancy. The testability and fault tolerance of these systems using the determined measures are estimated. The guidelines are given at the choice of frames, which one differ by quantity of software versions and processing algorithms of the information.

Tab. 1. Fig. 12. Ref.: 6 items.

UDC 519.713:681326

Simulation and test generation technologies for complex digital systems / V.I. Hahanov, K.V. Kolesnikov, A.N. Parfenty, I.V. Hahanova, V.I. Obrizan, O.V. Melnikova // Radioelektronika i informatika. 2003. № 1. P. 70-78.

The high performance program tools for test generation and fault simulation which oriented on complete digital systems processing, including about hundred thousand of equivalent gates are offered. All realized algorithms and methods are oriented on essential decreasing of test generation and fault simulation thanking new structural logical analysis and model reconfiguring during subject evaluation.

Fig. 7. Ref.: 16 items.

UDC 519.8

The computer simulation of the optimal decision making process under multicriteria continuous ball set covering / N.K. Vasylyeva // Radioelektronika i informatika. 2003. № 1. P. 79-84.

The method and the algorithm of solving the continuous ball set covering problems were developed and substantiated. For finding all optimal by Slater solutions the parameterization of the criteria by Germeer was applied. The estimates of the net steps, which approximate the covered set and the set of parameters of the objective functional reduction, were obtained. The results of the test calculations were given.

Fig. 3. Ref.: 9 items.

UDC 681.513

Wavelet neural network learning for nonstationary stochastic signals processing / Ye.V. Bodyanskiy, O.A. Vinokurova // Radioelektronika i informatika. 2003. № 1. P. 85-89.

The wavelet neural network learning algorithms are proposed. These learning algorithms have both the following and the filtering properties. The learning algorithms convergence is analyzed and the advantages compared to the known procedures are considered.

Ref.: 28 items.

UDC 519.81

Application of genetic algorithms' method for solving the multifactor estimation model comparatory identification problem / E.G.Petrov, D.A. Bulavin // Radioelektronika i informatika. 2003. № 1. P. 89-93.

The statement and the methods for solving the multifactor estimation model comparatory identification problem based on the use of genetic algorithms are considered. The results received with 5 alternative and 4 private criteria during the experiment are analyzed.

Tab. 2. Ref.: 6 items.

UDC 519.87

Organization of rule-oriented expert systems on local-parallel fuzzy algorithms / O.Ph. Mikhal // Radioelektronika i informatika. 2003. № 1. P. 93-100.

Principles are considered of organization of rule-oriented fuzzy expert system (ES) on local-parallel (LP) algorithms. ES contains interaction channels with operator and object of control, and supports four modes: base education, adaptation, autonomous adjustment and operating. The perspective application of LP algorithmic decisions, like this, can become distributed knowledge-based network ES with hostless use and renovation of knowledges.

Tab. 2. Fig. 6. Ref.: 10 items.

UDC 658.512.011.56: 681.5

Optimisation of amount and topologies of elements under structured syntheses territorial distributed systems / V.V.Beskorovainyi // Radioelektronika i informatika. 2003. № 1. P. 101-104.

Worded statement of the problem a determination of optimum amount of elements territorial distributed system and places of their accommodation as a problem of grouping the maintained objects. Offered heuristic method of deciding a problem, brought results of the experimental evaluation of its efficiency.

Fig. 1. Ref.: 11 items.

UDC 519.87; 535.345.67

The study of optimal parameters of one-, two- and three –layered homogeneous optical structures for a low- refracting substrate / A.V. Mitsa, J.I. Golovach // Radioelektronika i informatika. 2003. № 1. P. 105-109.

In the present article the problem of defining the optimal parameters of homogeneous optical structures for antireflecting a low-refracting substrate in different spectral ranges has been considered. The results of its solution are presented graphically.

Tab. 3. Fig. 8. Ref.: 5 items.

UDC 621.327

Method of two-dimensional structured coding binar's data / V.V. Barannik // Radioelektronika i informatika. 2003. № 1. P. 109-112.

In the article is considered method two-dimensional coding the binary arrays. In this case compact presentation given is reached to the account of eliminating two-dimensional structured избыточности, stipulated limited amount before-started areas for the highlighting of number of binary serieses. Developed two-dimensional generalised coding, organizing even presentation of code combinations.

Ref.: 5 items.

UDC 204.056.55

Propertes of the p-numbers and Stakhov matrices into circle of the integer numbers / M.I. Samoylenko, V.B. Ufimtseva // Radioelektronika i informatika. 2003. № 1. P.112-115.

Numbers and Stakhov matrices into circle of integer numbers is describe in article: recurrence formula of generates p-numbers, form of matrices, propertes of the multiplication commutativity and of the additivity, rules of raising to the power and of multiplication of the initial matrix by the matrices, formula of calculation the determinant of the Stakhov matrix and of the result and of multiplication of the initial matrix by the matrices.

Ref.: 2 items.

UDC 519.85

Solving of linear functions optimization problems with linear constraints on the permutations set reflected to. R^n / I.V. Grebennik, D.O. Lapko // Radioelektronika i informatika. 2003. № 1. P. 116-119.

Linear functions optimization problems with linear constraints on the permutations set reflected to. Euclidean space are considered. The method of solving of the such problems based on covering procedure of permissible solutions set by special sets is proposed. The computational experiments results are presented and analyzed.

Ref.: 8 items.

UDC 519.65+524.35-17

A Numerical Model for 11-year Solar Activity vs. h Car Cycles Resonance / S.V. Smelyakov // Radioelektronika i informatika. 2003. № 1. P. 120-122.

X-ray and spectroscopic observations of Eta Carinae have led to detecting of the basic 2020 day radiation cycle. However, it is not known whether the duration of this cycle was the same hundreds years ago, or not. It is established, that a two-centennial synchronism exists between the 11-year Solar activity cycle maxima and Eta Carinae event cycles, which allows us to assume the latter to present a master generator for the Sun.

Tab. 1 Ref.: 4 items.

UDC 615.47:617-089

Simulation of biomechanical signals of the lower finitenesses / T.V. Hosova, V.A.Pismeneckiy, V.V. Semenc // Radioelektronika i informatika. 2003. № 1. P. 122-124.

The article considers modeling of biomechanical signals of lower limbs. For building of models of biomechanical signals necessary to use the periodic functions, most forgiving of them are ($\sin mx$, $\cos mx$), their unions and combinations. The models of biomechanical signals allow the doctor-prosthetist better and quicker to select and tune the necessary patient a prosthetic device

Fig. 2. Ref.: 2 items.

UDC 539.173.84

Mathematical models of neutron passing through matter / I.M. Prokhorets, S.M. Prokhorets, M.A. Khazhmuradov // Radioelektronika i informatika. 2003. № 1. P. 124-128.

This article contains mathematical apparatus for calculating of fast and slow neutrons passing through moderator. The usage of such apparatus gives the possibility to create program complex for modeling of the processes, connected with neutral nuclear particles behavior in complex physical settings.

Tab. 2. Fig. 3. Ref.: 12 items.

UDC 681.32:519.713

Information flows in a control system of a urban engineering network / N.O. Manakova, A.V. Belogurova, I.A. Gavrilenko // Radioelektronika i informatika. 2003. № 1. P. 129-134.

In paper the information as a resource of management is considered, are allocated and the levels of management are characterized from the point of view of use of the information at the enterprise of a urban engineering network. For an estimation of efficiency of using this resource is analyzed of information flows in researched object. As a result of the analysis of existing information flows the lacks of document circulation resulting in decrease of efficiency uses of the information and management of system in were revealed whole. With the purpose of overcoming these lacks it was offered to modify movement of information flows on the basis of use of uniform storehouse of the data.

Tab. 2. Fig. 3. Ref.: 4 items.

UDC 681.326

Model of information interaction in focused on management of educational process monitoring systems of knowledge and training / E. Yu. Kataeva // Radioelektronika i informatika. 2003. № 1. P. 134-137.

The definition of the basic higher educational institutions, making to information environment is given. The communication between technology of the automated control of knowledge and efficiency of process of training is considered. The mathematical model of information interaction in technologies of the automated control of knowledge and training focused on formation of an information resource of a control system by educational process is developed. Is shown, that functions of the automated control of knowledge and training to be realized within the framework of a uniform control system of educational process.

Ref.: 4 items.

UDC 004.827:510.635

Determination of the minimal number of attributes in the rough sets / D.E. Sitnikov, E.V. Titova // Radioelektronika i informatika. 2003. № 1. P. 137-140.

The approaches to the minimization of the number of attributes which describe the rough sets are under consideration. The task of finding the attributes, which can't be canceled is given in geometric form. The question of picking out the attributes which divide the rough set into the classes of equivalence is solved and the number of attributes needed for adequate description of the rough set is counted.

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

UDC 519.21

Mathematical models of financial streams, originating during activity multilevel business-structure / E.P. Minko, E.V. Slipchenko / Radioelektronika i informatika. 2003. № 1. P. 140-143.

In the article the outline business - structure is investigated. The characteristic levels of business processes are chosen, for which the problem of optimum control of financial resources is decided. Fig. 5. Ref.: 9 items.