

ABSTRACTS
Radioelektronika i informatika. 2007. № 1

UDC 517.922+517.958

Mathematical modeling of transient states of nonlinear microwave circuits / L.A. Vlasenko, A.G. Rutkas // Radioelektronika i informatika. 2007. № 1. P. 4-8.

Mathematical models of transient states of microwave circuits with nonlinear lumped parameters have been constructed. Models contain degenerate nonlinear delay differential equations. Existence and uniqueness theorems for degenerate nonlinear delay differential equations have been obtained. Theoretical results are applied to calculate currents and tensions of nonlinear microwave circuits.

Fig. 1. Ref.: 8 items.

UDC 537.533; 519.68

Secondary-emission processes with the simulation of magnetron type instruments / M.A.Kopot' // Radioelektronika i informatika. 2007. № 1. P. 9-13.

Questions of the selection of analytical expression for the simulation of the processes of secondary-emission multiplication are examined. It is shown that they do not consider the elastic-reflected electrons in the low-energy part of the spectrum of the electrons bombarding cathode? And the energy spectrum of the bombarding electrons essentially differs in the constructions with the basic thermionic cathode and the cold secondary-emission cathode.

Fig. 8. Ref.: 9 items.

UDC 539.1.074

Simulation of the noise effect on the performance of CdZnTe gamma-radiation detector / A.A. Zakharchenko, V.E. Kutny, I.M. Prokhoretz, A.V. Rybka, M.A. Khazhmuradov // Radioelektronika i informatika. 2007. № 1. P. 13-16.

The influence of noise on the energy resolution and registration sensitivity of CdZnTe spectrometry and dosimetry detectors of gamma radiation was investigated on the basis of the especially developed model. The limiting values of the equivalent noise power permitting the energy resolution better than 2 % at 662 keV (^{137}Cs) were calculated. A signal discrimination level at which noise does not influence the accuracy of gamma-radiation dose measurements with CdZnTe devices was determined.

Fig. 6. Ref.: 18 items.

УДК 621.311

Model of target product balance in control systems of a power grid / A.L.Yerokhin // Radioelektronika i informatika. 2007. № 1. P. 17-20.

The improved model of target product balance in the complex system with channel structure by the example of a power grid is developed. The predicate equation for the registration disbalance in the system is offered.

Fig. 3. Ref.: 6 items.

UDC 519.854.2

Modified effective PCD-algorithm for the solution of the one machine problem of minimization the total tardiness of independent tasks / A.A.Pavlov, E.B.Misura, E.A.Khalus // Radioelektronika i informatika. 2007. № 1. P. 21-23.

The one machine problem of minimization the total tardiness of independent tasks with due dates is a well-known NP-hard problem of the scheduling theory. In this article the modified exact effective high-speed PCD-algorithm (algorithm with the polynomial and the decompositional components) is presented for this problem solution based on the new constructive theory of the difficultly solved combinatorial optimization problems solution. The developed algorithm allows to reach exact solutions for problems of essentially greater dimension, than allowed for existing exact methods.

Ref.: 4 items.

UDC 621.37

Process of global block-diagonalization of matrices / I.S. Agapova, V.A. Dikarev, N.S. Podgorbunskiy // Radioelektronika i informatika. 2007. № 1. P. 24-29.

The algorithm of block-diagonalization of matrices is developed. This algorithm can used for the conclusion of the systems of telegraph equalizations from Maxwell equations. This algorithm is realized at more commons suppositions about the elements of matrix of the system (for example, when the elements of matrix are piecewise analytical).

Ref.: 4 items.

UDC 519.21

Correlation theory of some classes nonstationarity random functions of nonstationarity rank finiteness // Radioelektronika i informatika. 2007. № 1. P. 29-34.

We introduced functional and numerical characteristics for description of deviation of vector random processes and sequences from the stationarity ones. We received a criterion of evolution representability for vector random processes and sequences. We obtained necessary and sufficient conditions in terms of correlation matrix for corresponding evolution representability, as well as a criterion of nonstationarity rank finitenes.

Ref.: 6 items.

UDC 681.324

Optimization of Moore FSM as a part of “system-on-chip” / A.A. Barkalov, S.O. Tsololo // Radioelektronika i informatika. 2007. № 1. P. 35-39.

Method of Moore’s circuit optimization is proposed. Method based on features of CPLD architecture and Moore’s FSM model. The example of offered method is given. The carried out researches have shown that the method reduces hardware expenses up to 30%.

Tab. 2. Fig. 4. Ref.: 10 items.

UDC 681.326:519.713

Memory repair method by using spares / V.I. Hahanov, E.I. Litvinova, K.L. Mostovaya, A.A. Parphentiy // Radioelektronika i informatika. 2007. № 1. P. 39-44.

Memory repair method by means of spares that enables to cover faulty cells by minimally quantity of reserved components was represented. It enables to increase yield rate (by 5-10 %) by means of repair of faulty silicon crystals on the manufacturing stage, as well as to increase life cycle time of silicon crystals during operation phase.

Fig. 8. Ref. 10 items.

UDC 719.161

Polynomial transformation to the approached algorithms of the decision of problems such as the direct-sales representative / I.V. Garashchenko, O.B. Matsy, A.V. Panishchev // Radioelektronika i informatika. 2007. № 1. P.45-49.

The approach to increase of accuracy of the approached decisions for a class of problems such as the direct-sales representative is offered. Development of algorithm of a symmetric problem of a class of the direct-sales representative with a matrix of the cost described by the big number of identical values.

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

UDC 681.3.06

Analysis of the facilities of the checking the access and protection to information from network attacks/ Z.Dudar, M.Zbitneva // Radioelektronika i informatika. 2007. № 1. P. 50-56.

The analysis is carried out, merits and demerits of modern means of the control of access and protection of the information against network attacks come to light. The result of research is made out as classification for which construction gets out hierarchical a method.

Ref.: 5 items.

UDC 681.30001.571

Artificial neural network application for voice robot control / I.Sh. Nevlyudov, A.M. Tsimbal, S.S. Milyutina // Radioelektronika i informatika. 2007. № 1. P. 56-61.

There is proposed to apply the artificial neural network for robot control voice setting. The software which implements multi-layer perceptron with hidden layer on base of various transformation functions is developed.

Fig. 3. Ref.: 7 items.

UDC 519.7

Objective representation of electronic text documents /A. Gvozdinski, N. Yakimova, V. Gubin // Radioelektronika i informatika. 2007. № 1. P. 61-63.

In work the approach to formalization of contents of electronic text documents is offered. Thus documents move in the form of set of objects of two kinds - objects of containers and atomic objects. It is marked, that set of objects of containers displays topological, and set of atomic objects - information aspect of the contained document.

Fig. 2. Ref.: 2 items.

UDC 004.77:004.738.2

Modified data transmission rate adaptation method based on RRAP protocol / V.I. Sayenko, O.M. Snurnikov // Radioelektronika i informatika. 2007. № 1. P. 64-68.

This paper proposes results of studying modified rate adaptation protocol based on RRAP. It is considered for cases of concurrent flows transmission over computer network with shared bottleneck. The range of the best- values of case method parameter values are proposed

Fig. 8. Ref.: 11 items.

UDC 004.93

Peculiarities of the Kohonen network learning for image compression using neural core entropy method / B.P. Rusyn, Z.M. Lubun, O.A. Lutsyk // Radioelektronika i informatika. 2007. № 1. P. 69-72.

A neural core method for Kohonen network learning in the case of image compression is proposed. The presented method was tested on the large set of images. As the evaluation criterion of method the peak signal to noise ratio is used. The efficiency of neural networks for image compression is shown.

Fig. 4. Ref.: 3 items.

UDC 681.3.06

Optimization of Building IT Infrastructure in Institutes of Higher Education / S. S. Baydachnyy // Radioelektronika i informatika. 2007. № 1. P. 73-77.

When choosing a manner of building a system of electronic access to scientific and educational resources one should remember that it must correspond to existing application infrastructure in the institute. Along with it a further way of information complex development must be considered. The article describes a model of a system of electronic access to scientific and educational resources with infrastructure changes according to Microsoft.

Fig. 2. Ref.: 4 items.

UDC 681.3.06

Development of electronic commerce in Ukraine / Zamula A.A., Minka A.S. // Radioelektronika i informatika. 2007. № 1. P. 77-80.

The analysis of a condition of electronic purchases for public funds is resulted. Requirements to information systems in a network the Internet are formulated, for realization of laws of Ukraine about protection of the information in is an information telecommunication system.

Ref.: 7 items.

UDC 517.711.3:519.68

A mathematical model for market consistent valuation of non-state pension funds activity / O.E. Putyatina // Radioelektronika i informatika. 2007. № 1. P. 81-84.

The paper describes a mathematical model of evaluating the activity of non-state pension funds of Ukrainian new pension system. A differential equation that allows the manager to determine the fair value of pension policies and default hedging instruments was derived. The solution to the equation is given in analytical and numerical forms.

Fig. 3. Ref.: 3 items.

UDC 519.85

Tasks of multicriterion optimization on the polyplasing set and approach to their untiing / L.M. Kolechkina, O.A. Rodionova // Radioelektronika i informatika. 2007. № 1. P. 84-88.

The tasks of multicriterion optimization on the combinatorial sets have the wide spectrum of application, because they are formalization of many life's processes. This article has the formulating of the task and offers the combined method to untiing of tasks class with many criteria on the polyplasing set .

Ref.: 5 items.

UDC 004.7

Fuzzy model of the avalanching time characteristics interpretation / A.Ya. Kuzemin, V.V. Lyashenko, D.V. Fastova // Radioelektronika i informatika. 2007. № 1. P. 88-91.

The method of the membership function building of avalanche and non avalanche sets is proposed in this article. This method is based on use frequency distribution of the avalanche characteristics probabilities. Derived fuzzy avalanche situations sets form standard set. A study of new data with the standard set is used for the interpretation of the avalanching time characteristics. The possibility of applying the model on real data is shown.

Fig. 4. Ref.: 7 items.

UDC 330.115:658

Stability information system of the enterprise: a transparency and economic safety / N.V.Kurkin // Radioelektronika i informatika. 2007. № 1. P. 92-94.

It is proved values of a transparency of the enterprises and availability of the information on their activity; it is opened contradictions between necessity of a transparency and maintenance of economic safety of the companies which decision is offered for carrying out on the basis of formation of stable information system.

Ref.: 11 items.