

ABSTRACTS
Radioelektronika i informatika. 2009. №1.

UDC 517.958:537.8

Modeling of nonsine source field scattering by a special bicone structure / V.A. Doroshenko, N.P. Klimova, N.G. Zujev, A.M. Titarenko // Radioelektronika i informatika. 2009. №1. P. 3-8.

Rigorous formulated problem of exciting a bicone surface with longitudinal slots by an impulse source is investigated. The solution method of the mathematical problem is based on using integral transforms. Analytical solutions has been obtained for approximations of narrow slots and narrow cone strips. The initial-boundary problem spectrum and distribution features of the field near scattered surface singularities are studied.

Fig. 2. Ref.:10 item.

UDC 517.922+517.958

Transient states in multiwire transmission lines with lumped elements at the output. I. Dispersion-free line /L.A. Vlasenko, A.G. Rutkas // Radioelektronika i informatika. 2009. N 1. C. 9-15.

We model transient states of dispersion-free multiwire transmission line with impulse perturbations. The line output is loaded with arbitrary circuit with lumped linear and nonlinear elements. The problem includes an analysis of a descriptor (degenerate) system of delay differential equations.

Fig. 9. Ref.: 14 items.

UDC 621.391

Asymptotic Properties of Joint Estimation of Signal Time of Delay and Statistical Descriptions of Non-Gaussian Interference / T.V. Vorobkalo, A.V. Goncharov // Radioelektronika i informatika. 2009. N 1. C. 15-19.

In this article asymptotic properties of estimation of informing a parameter time of delay of harmonic signal are probed by the method of maximization a polynomial in the conditions of apriority partial vague of statistical descriptions of non-Gaussian interference. It is shown that due to the account of cumulyants coefficients of higher orders it is possible to attain the increase of exactness of evaluation of parameters of random value.

Fig. 4. Ref.: 5 items.

UDC 517.5(075.8)

Decomposition of correlated discrete random processes in stochastic functional series with a generating element / S.Zabolotniy, O.Gavrish // Radioelektronika i informatika. 2009. N1. P.19-22.

The method of decomposition in space with the generate element (space of Kunchenko) of discrete random processes (time sequences) subject to the condition корельованості of their values is adapted. The method of finding of functional kernels of decomposition by passing to the frequency area is expounded. Analytical expressions for the evaluation of size of mean-square error of decomposition are got.

Ref.: 7 items.

UDC 621.385.6

Plane wave scattering from the cylinder with time-varying dielectric permittivity/ N.K. Sakhnenko, A. G. Nerukh//Radioelektronika i informatika. 2009. N.1. P. 23-27.

Theoretical investigation of the harmonic plane wave scattering from the cylinder with time varying dielectric permittivity has been carried out. Analytical solution for the time jump of dielectric permittivity has obtained. Transformation of the field pattern and duration of the transient period has been studied.

Fig. 5. Ref.: 10 items.

UDC 519.233.5

Estimation of polynomial regression coefficients on a collection of realizations/A.V. Omelchenko, A.V. Fedorov / Radioelektronika i informatika. 2009. N 1. P. 28-32.

An estimator of polynomial regression coefficients on a collection of realizations with known variances of observational noises has been justified. It is shown that the estimate has the minimal possible variance in the class of linear unbiased estimates. It has been retrieved analytical expressions for the coefficients of relative effectiveness of the offered estimators. Also there are some examples that can confirm effectiveness of the estimators have been considered in the paper.

Fig. 2. Ref.: 6 items.

UDC 621.396

Use of simulators for debugging of algorithmic maintenance of incoherent scatter radar / D. P. Belozarov, V. O. Pulyayev, E. V. Rogogkin // Radioelektronika i informatika. 2009. N 1. P. 32-37.

The simulation model which allows to form entrance signals for incoherent scatter radar at any vector of ionospheric parameters is considered. It gives possibility to control of correct functioning of hardware and algorithmic radar maintenance.

Tab. 2. Fig.1. Ref.: 6 items.

UDC 517.922+517.958

Structural and functional characteristics of descriptor neural networks /A.A. Rutkas, V.I. Hahanov // Radioelektronika i informatika. 2009. N 1. P. 37-45.

A discrete difference or a discrete dynamical system is modeled with the help of a artificial neural network. The network is built by dynamical or static neurons and some simple functional transformers. Network functional properties and a dependence of its structure on parameters of dynamical system are used.

Fig.4. Ref.: 10 items.

UDC 681.326:519.613

Coverage Method of FPGA Faulty Complex Logic Blocks by Using Spare Tiles /E.I. Litvinova // Radioelectronics i Informatics. 2009. N 1. P. 46-49.

The matrix model of FPGA complex logic blocks in the form of tiles, which include defects, and defect coverage method by means of CLB matrix traverse to repair of FPGA components enable to obtain the solutions in the form of quasi-optimal coverage of a defect set by minimal quantity of spare tiles.

Fig. 2. Ref.: 6 items.

UDC 680.3

The Method of tasks fragmentation for homogeneous computer networks with the using of formal polynomials apparatus / G. Polyakov, H.Tolstolughskaya, S. Shmatkov, G. Gieachpour // Radioelektronika and informatika. 2009. N 1. P. 50-56.

Describing a method of problems separation into fragments (sub-tasks) with the minimization of the number of data exchanges between fragments to solve the problems on homogeneous computer networks

Fig. 6. Ref.: 15 items.

UDC 681.3

Comparative study of image compression algorithms / Ye.S.Sulema, Samira Ebrahimi Kahou // Radioelektronika i informatika. 2009. N 1. P. 57-65.

The algorithms which can be used for images compression are discussed. The images classification based on statistical characteristics of an image is proposed. Both the selection of the criteria of compression algorithms comparison and the method of this comparative analysis fulfilment are discussed. The results of the comparative study are discussed as well as the conclusion on their using in further researches is drawn.

Tab. 6. Fig. 13. Ref.: 7 items.

UDC 539.2:535.3

Smooth transmittance edge tuning of multilayer periodic cutting-off systems / A.A. Galuza // Radioelectronics i informatica. 2009. N 1. P. 66-70.

The paper deals with the problem of cutting edge smooth tuning of multilayer periodic systems under conditions of a finite set of on of the layers thickness. It is shown that surrender to keep layers quarterwave allows to shift the cutting edge within some range without significant deterioration of spectrum characteristics. The method developed is used to synthesis a polymer-crystalline multilayer interference system based on polyethylene and germanium which is to be used as cutting-off filter for far infrared spectral region.

Fig. 7. Ref.: 10 items.

UDC 519.1

Localization of value of linear function set on permutations / G.A. Donec, L.N. Kolechkina // Radioelectronics i informatica. 2009. N 1. P. 76-81.

In the present work the extreme problem of combinatory optimization on shifts and a method of its decision is presented. Communication between area of admissible decisions of such problems and columns of polyhedrons is considered. The method of localization of value of linear function on shifts is offered.

Fig. 8. Ref.: 13 items.

UDC 519.63:519.85:533:532.542

The method of the approached decision of the Cauchy problem for system of the equations of stationary flow of gas in the pipeline / A.D.Tevyashev, V.S. Smirnova // Radioelektronika i informatika. 2009. №3. P. 81-87.

The method of the approached decision of the Cauchy problem for system of the equations of stationary flow of gas in the pipeline was offered. Verification of this method was carried out by comparison of results of the approached analysis with results of numerical modelling stationary not isothermal modes of natural gas flow.

Tab. 3. Fig. 1. Ref.: 13 items.