

## АННОТАЦИИ СТАТЕЙ НА АНГЛИЙСКОМ ЯЗЫКЕ

*Afanasiev Konstantin E., Vershinin Evgeny A., Trofimov Sergey N.* Kemerovo State University. **Analysis of reflection noise in nonuniform multiwire signal transmission lines.** This work considers analysis of reflection noise in nonuniform multiwire signal transmission lines in the time domain. The analysis is conducted using the TVD-scheme of the Godunov method. The results of numerical simulation are compared with other authors' results and experiment data. The results of numerical simulation are represented as diagrams for tensions in the signal and passive lines.

**Keywords:** transmission line, Godunov method, TVD-scheme.

*Ignatiev Aleksey S., Semenov Alexander A., Hmelnov Aleksey E.* Institute of System Dynamics and Control Theory SB RAS (Irkutsk). **Use of binary decision diagrams in the problems of discrete functions inversing.** The paper shows how binary decision diagrams (BDD) can be used when solving problems for a special scalable family of discrete functions. A method for solving logical equations is proposed; the method is a combination of two approaches, namely of the SAT-approach and of the approach based on ROBDD-representation of the characteristic function of a given equation set. The paper also describes the architecture of a "typical" BDD-solver that can be used for solving logical equations.

**Keywords:** binary decision diagrams, solving problems for a scalable family of discrete functions.

*Kolesnikova Svetlana I.* Tomsk State University of Control Systems and Radioelectronics. **Methods of analysis of different-type features informativity.** The problem of estimation of informativity of different-type features for regularities discovery and decision-making support in the intelligent systems is considered. The characteristics of the three probabilistic and discrete approaches to estimation of different-type features taking into account different kinds of dependence of them are analysed. The two-side estimates for probability of critical number of features for guaranteed level of quality of pattern recognition procedure are obtained.

**Keywords:** intelligent system, test pattern recognition, weight coefficient of feature, entropy, estimated Parzen-Rosenblatt probability density function, quality of pattern recognition algorithm.

*Medvedev Gennady A.* Byelorussian State University (Minsk). **Representations of joint probability densities for interest rate stochastic processes.** Joint probability densities of some diffusion processes are represented as a mix of distributions. The mixing random variable has negative binomial distribution, and under the fixed value of a mixing random variable the joint density become a product marginal, i.e. values of process at the various moments of time as though become "independent", and it turns out, that the mixing random variable "regulates" dependence between different values of process.

**Keywords:** Joint probability density, diffusion stochastic process, mix of probability densities.

*Medvedev Yury G.* Institute of Computational Mathematics and Mathematical Geophysics SB RAS (Novosibirsk). **An extension of the cellular-automaton FHP-I flow model to the FHP-MP multi-particle model.** In the paper, the author proposes the extension of the lattice gas models by using integer values for the velocity vector modulus instead of Boolean values. As an example, a new FHP-MP model is given. Numerical flow simulation was performed using the new model. The simulation results have been compared with known results.

**Keywords:** cellular automaton, flow simulation, lattice gas.

*Nikolaeva Ekaterina A.* Tomsk State University. **Test generation for single and multiple stuck-at faults of a combination circuit designed by covering shared free BDD with CLBs.** A combinational circuit is derived with covering the proper Shared Free BDD by CLBs in the frame of FPGA technology. Single stuck-at faults at the CLBs poles and multiple faults constituted from such single stuck-at faults are considered. It is shown that the test patterns as for the certain single stuck-at faults so for

multiple stuck-at faults there not always exist. The test pattern for a multiple stuck-at fault is the special test pattern for the special single stuck-at fault forming the multiple one. Test for all multiple stuck-at faults is derived from any test for all single stuck-at faults. Multiple fault test is a test of high quality. It can be used for the combinational part of a sequential circuit in BIST techniques.

**Keywords:** Shared Free BDDs, Single Stuck-at Faults, Multiple Stuck-at Faults, test design.

*Perminov Valery A.* Belovo branch of the Kemerovo State University. **Numerical solution of crown forest fire initiation problem in three dimensional setting.** On the basis of laws of mechanics of continuous reacting media and experimental data the mathematical model of forest fires initiation is developed. The new technique of the numerical decision of spatial (three-dimensional) problems of the theory of forest fires is used. Distributions of velocities, temperatures, concentration a component gas (the oxygen, flying products of pyrolysis and burning) and condensed phases in space in a vicinity of the center of occurrence and distribution of forest fire are received.

**Keywords:** control volume, discrete analogue, forest fire.

*Smagin Sergey V.* Tomsk State University. **Syntheses dynamical tracking system on criterion with sliding interval of optimization with unknown polynomial disturbances.** It is considered algorithm of the syntheses dynamical tracking system for the linear discrete object with an unknown polynomial disturbances. It is offered dynamic control law with depth of the memories on state vector.

**Keywords:** tracking system, criterion with sliding interval of optimization, polynomial disturbances.

*Solovieva Ulia S. Grekova Tatiana I.* Tomsk State University. **Construction of the models of behavior of the economic processes by neuronet technologies.** In the report we consider application of various neuron networks for construction of the models and the forecasts of behavior of the economic processes submitted by statistical samples of a different kind and volume, and their subsequent comparison on quality and adequacy. Also, we analyze a choice of the topology of neuron networks for achievement of the most qualitative modeling and forecasting of the behavior of various economic processes depending on a type of primary sequences of data can be submitted.

**Keywords:** modeling, forecasting, neuron networks, economic process, sample, dynamic series.

*Stepanova Natalia V.* Altai economic-juridical institute (Barnaul). *Terpugov Alexander F.* Tomsk State University. **Mathematical model of the trade as a queuing system of M/M/1/∞ type with the refusal of queuing. Part 1. The stream of served requests.** One studies the properties of the stream of served requests in queuing system of M/M/1/∞ type with the refusal of queuing.

**Keywords:** queuing system, output stream.

## АННОТАЦИИ СТАТЕЙ НА РУССКОМ ЯЗЫКЕ

*Петренко А.Ф.* Исследовательский центра по информатике (Монреаль, Канада). *Евтушенко Н.В.* Томский государственный университет. **Уточнение недетерминированного эталонного автомата при условном тестировании.** В статье рассматривается синтез проверяющих тестов с гарантированной полнотой для недетерминированных автоматов. В качестве отношения конформности (соответствия) рассматривается отношение редукции, т. е. для каждой входной последовательности множество выходных последовательностей «хорошего» проверяемого автомата должно содержаться в множестве выходных последовательностей эталонного автомата. Мы рассматриваем условный эксперимент с проверяемым автоматом т.е. предполагаем, что перед подачей следующего тестового набора на проверяемый автомат, мы анализируем выходные последовательности этого автомата на предыдущие тестовые последовательности. Чтобы сократить длину проверяющего теста, в данной работе мы предлагаем «уточнять» эталонный автомат, удаляя из него вход-выходные последовательности, которых нет в проверяемом автомате, правильно отреагировавшем на некоторые тестовые последовательности. В результате эталонный автомат становится «более детерминированным», и может оказаться, что требуемая полнота тестирования для такого более детерминированного эталонного автомата будет достигнута ранее, чем для исходного эталона. Достоинства предлагаемого подхода иллюстрируются на простом примере.

**Ключевые слова:** Конечный автомат, условное тестирование, модель неисправности, полный проверяющий тест, эксперименты с автоматами.